



Published on the 1st of each month by
THE INDIA RUBBER PUBLISHING CO.
 No. 25 West 45th Street, New York.
 Telephone—Bryant 2576.
 CABLE ADDRESS: IRWORLD, NEW YORK.

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Vol. 58. JULY 1, 1918. No. 4.

SUBSCRIPTIONS: \$3.00 per year, \$1.75 for six months, postpaid, for the United States and dependencies and Mexico. To the Dominion of Canada and all other countries, \$3.50 (or equivalent funds) per year, postpaid.

ADVERTISING: Rates will be made known on application.

REMITTANCES: Should always be made by bank draft, Post Office or Express money order on New York, payable to THE INDIA RUBBER PUBLISHING COMPANY. Remittances for foreign subscriptions should be sent by International Postal Order, payable as above.

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 Entered at the New York post office as mail matter of the second class.

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MACHINE-GROWN RUBBER AT LAST.

IT was long ago predicted that the day would come when rubber planting, gathering and extraction would be done by machinery in a manner analogous to that used in the beet sugar industry. The success of the guayule experiments, as described in another column, and the great areas now being prepared, planted, cultivated and harvested by motor-drawn machines fulfil that prophecy. That the plantations are utilizing desert lands in American territory and in a climate ideal for white men, are in themselves facts of great moment, for the vexed questions of land costs, revolutions and tropical diseases are wholly absent. The ever-increasing labor problem also, as it confronts the rubber planter, is almost eliminated.

An American-grown rubber, with no overseas handicaps, exposed to no submarine dangers, free from import or export taxes, unaffected by price-fixing by rubber planters' associations, unafraid of valorization, is almost too good to be true. Were it not war-time there would be a likelihood of another rubber craze, once the prospective profits of guayule cultivation were known. For example, a comparison of *Hevea* and guayule profits at the time of the historic rubber craze would be about as follows, and is startling: *Hevea* then brought \$2 a pound

and the profit was about \$400 an acre. Guayule then sold for \$1 a pound and cultivated would show a profit of more than \$16,000 per acre. Or, basing the comparison upon to-day's costs and prices, *Hevea* profits would stand at, say, \$136 an acre and cultivated guayule at over \$6,000 an acre.

These figures, to be sure, do not include the cost of installing the plantation plant, extraction plant, patent royalties, etc. But cutting them in half to cover these items, there remains a profit of \$3,000 an acre, which is astounding indeed and almost unbelievable.

They are also only generally illustrative, as the two problems differ in many details. For example, a four-year-old *Hevea* tree produces, say, two pounds of rubber, and when matured it produces much more. A four-year-old guayule shrub gives at its best two pounds of rubber, and that is its maximum. There is, however, the important fact to be kept before those who plan to start in this line. It is a far more intricate business than *Hevea* growing, and lack of knowledge in a dozen different essentials will spell disaster. There is also the high cost of installation of the plantation and extraction factory. To prepare, irrigate and plant enough land to keep a ten-ton mill going would cost, roughly, \$500,000, and the mill at least \$200,000. In other words, it is a million-dollar undertaking and the small operator has no great chance. With the expansion of the business, however, it is perfectly possible that central factories will be installed for extraction and that guayule growers will ship their product in as the beet-root growers do theirs to the sugar centrals.

As to the grade of rubber produced, plant analysis has found certain types of shrub that carry a high grade of rubber, and these have been hybridized with plants that contain percentages of 20 per cent or more of rubber. A better grade of gum than the Mexican product is therefore in prospect in the cultivated guayule rubber, some day to figure largely in our markets.

That the product will seriously affect the market at once is of course not possible, for production of cultivated guayule is hedged in by special knowledge and those ignorant of the plant and its peculiarities would score failure at first. Just what its effect will be upon cultivated *Hevea* is a guess, but the chances are that it will make a place for itself and in no way handicap existing or future tree plantations. Indeed, the production of rubber without the need of thousands of laborers may act as a deterrent to the constantly increasing demands of the tropical laborers for higher wages.

UNCLE SAM'S RUBBER GUARANTEE.

A VERY patriotic and practical thing is to look at the 100,000 tons of "overseas" rubber promised by the Government not as a restriction but as a guarantee. It is the first time since the war began that manufacturers have received any assurance of continued supplies. A

new embargo or severe restriction, at least, on the part of Great Britain, was neither impossible nor improbable, considering the need of cargo space. Now, however, she will back up her partner, Uncle Sam, to the limit and 100,000 tons are assured.

Furthermore, there is no actual shortage at present nor probable in the future. Last year we used 57,000 tons above 100,000. As we have in stock 80,000 odd tons we are really better fixed than we were. Anxiety and speculation are therefore the part of folly and not of wisdom.

ALLOCATION, THE MOTHER OF INVENTION.

RESTRICTIONS, allocations, readjustments, while not altogether desirable, do not disturb the poise of the American rubber manufacturer. The business presents so many and such varied means for attaining its ends, and is possessed of such opportunities, mechanical, chemical and inventive, that it easily adapts itself to conditions that would seriously embarrass any other line of manufacture. As an instance, the white tire was supplanted over night by an equally good black tire when zinc oxide became suddenly scarce and costly.

Speaking of tires and the high price of cotton, we have long been awaiting the announcement of cord tires of hemp, ramie or perhaps paper cord as effective substitutes.

So, too, with the embargo on castor oil; there will be a new white substitute, perhaps from rubber seed oil, which will cheer up the planters in the Middle East. In short, all of the war restrictions will be met and overcome and will serve to develop the business as no other experiences could do.

EXPORT COMBINATIONS LEGALIZED.

THE passage of the Webb bill may be regarded as a considerable step toward definite government encouragement of more aggressive action in securing foreign markets for American products.

The rubber business now ranks fourth among American industries, and it is logical to suppose that under the impetus of this new law the United States, the world's principal consumer of crude rubber, might readily become the principal purveyor of manufactured rubber goods in export as well as domestic trade. But this can be accomplished only by making the best of our opportunities with the certain knowledge that ventures into foreign markets will be supported by a vigorous national policy encouraging efficient production, convenient finance and cheap transportation. Manufacturers and merchants must now prepare hand-to-hand with the Government for greater overseas enterprise when our rapidly growing merchant marine is ready for commerce after the war.

The productive capacity of the rubber industry, and of American industries generally, had exceeded domestic

consumption before the war, and has since been vastly expanded to supply the war's wastage. The same is true of other countries, and implies a keener competition, in which America must be successful if labor is to be kept employed and our victorious soldiers returned to industry. England has a vast organization for the promotion of foreign trade with the coming of peace; Germany is organizing for this exactly as she did for war, and America must also promote her interests if we are to secure the share of world trade to which our resources, skill and enterprise entitle us, in friendly competition with other nations which are at once our customers and suppliers of raw materials and merchandise.

AMERICAN RESTRICTIONS AND BRITISH REVENUE.

A WELCOME spirit of ready comprehension is shown by "The India Rubber Journal" in commenting editorially on the reduced revenue to British shareholders which must be the inevitable result of American restrictions upon the importation of crude rubber, and the consequent curtailment of plantation output. Our English contemporary writes:

We feel quite sure that every Britisher in this country will bear the reduction in his income bravely so long as he feels sure that the restriction of imports to America is necessitated by the military position. On the other hand, one must in all restrictions of this kind, bear in mind the effect on the revenue of the Allies as a whole, and it is from this point of view that we wish our American friends to further consider the position.

Plantation shareholders everywhere may rest assured that the restrictions now prevailing were imposed by the United States Government solely because of the shipping situation and the military needs of the Allies. To the American rubber trade, as well as to plantation shareholders, curtailment involves a regrettable hardship which must for the time being be borne as a patriotic duty, but the trade hopes that at no far distant day American ship tonnage will have so increased that the present restrictions may be greatly relaxed or abolished altogether.

THE CANCELLATION OF ALL IMPORT LICENSES FOR manufactured rubber goods by the War Trade Board brings instant appreciation on the part of American manufacturers. Readjustments, contracts, high cost of materials and labor, were all accepted with patriotic willingness. But foreign competition, added to necessary war burdens, was rapidly assuming the importance of the proverbial "last straw."

THE ALIEN PROPERTY CUSTODIAN HAS TAKEN OVER the fur business in the United States which was owned by Germans. As gutta percha tissue is largely used in fur work, will that mean that German-owned tissue plants will also be taken over?

Guayule Cultivation a Success.

The article following is a portion of a Special Report issued by the Department of Commerce. It was written by Henry C. Pearson, Special Agent, Bureau of Foreign and Domestic Commerce, Department of Commerce, Washington, District of Columbia.

ONE must go back at least ten years. Of all the companies operating in Mexico, one was preeminent, in product, processes, and in vast holdings of land. It was an American concern, with ample capital, and unusual administrative talent. To those in charge it was perfectly apparent that the time would come when the wild guayule fields would be exhausted and the business stop entirely or shut down until new plants matured. Whether regrowth could be induced or the shrub be raised from seed or cuttings, none knew. Most of those who were asked concerning this were positive in their declarations that it would never yield to profitable cultivation. The actual head of the company, a man of broad vision, although careful and conservative, believed that with sufficient effort the impossible could be done. Under his direction, therefore, the work was begun.

MEXICAN PRELIMINARIES.

The first thing was the selection of a corps of chemists, botanists, plant physiologists, and experts in desert plants. For this they drew men from agricultural colleges, desert laboratories and experiment stations, arranging to send their notes and conclusions to these seats of botanical learning, receiving from them knowledge in return. This body of men, which was added to from time to time, embraced such well-known names as Dr. Francis E. Lloyd, Dr. Theodore Whittelsey, Dr. J. E. Kirkwood, Professor C. L. Hare, Professor J. P. C. Southall, Dr. W. B. McCallum and half a score of others.

These scientists took up the following subjects and exploited them most thoroughly. Geographical and altitudinal distribution, climate, air and soil temperatures, rainfall, soil moisture, and relative humidity, analysis of soils and of plants under all conditions, diseases, effects of drought, rain and of irrigation; seeds, leaves, flowers, stems and roots were subjected to the closest scrutiny, under a multiplicity of conditions, and the results all tabulated.

In time their work begun in Mexico was transferred to the United States, notably to California and Arizona. Here were established laboratories and experimental plants, and the work on a commercial scale actually commenced.

Prior to the actual planting for commercial product, the plant was practically remade to meet the necessities in the case.

AS TO SEED SUPPLY.

The seed of the guayule is very minute, and if one examines the desert plant, very unsatisfactory. In the heads that should hold good seeds will be found half-developed dried husks of seeds and very few good ones. As vital seed, and plenty of it, is an essential, the guayule trainers took hold of the shrub, planted it under varying conditions, fed, watered, starved, and petted it until it was learned positively just what conditions were necessary to full seed pods. In time the barren seed vessels became full ones, and the treatment necessary to get this result became a matter of record.

GERMINATION.

It may not be generally known, but seeds of some plants, seeds that are vital, and that should germinate without difficulty, refuse to do so. This seems to be particularly true of certain desert growths. For example, there is a cactus distributed very generally through the southwest that bears seeds in abundance. So far, however, no one has been able to get these seeds to germinate. It was not on the cards that guayule should prove to be in this class. It promised so many other disabilities that it did not seem possible that it had this also. Nevertheless when the first bushel of seeds was carefully sown not one germinated. And so it was with succeeding lots. There was nothing to do but sow smaller lots under every condition that could be thought of, and learn just what was required.

For a long time only failure resulted and gloom settled on the experimenters. Then an accident pointed the way and soon this problem, too, was solved.

SPEEDING-UP THE GROWTH.

The problem of speeding up the growth of the plant was one of the most interesting and vexing of all. Left to itself in its desert home under normal conditions, a guayule seedling takes some twenty years to arrive at maturity, that is, as a rubber-bearing proposition. It grew a little at a favorable season each year. The

rest of the time it existed, did not grow, nor do anything but sleep. Now, it is exceedingly difficult to get tree, shrub, or plants to do anything that they and their forbears have not previously



SEVERAL HUNDRED TYPES OF GUAYULE UNDER OBSERVATION.



HEADQUARTERS OF A CALIFORNIA GUAYULE STATION. HERE SUCCESS WAS FINALLY ATTAINED

done. They are hidebound in their prejudices, rock-ribbed as to their habits. They have no ambition to speed up, to be efficient, to be different. These plant prejudices must first be understood and habits broken by coaxing, cajoling and fooling. For example, the guayule habit of a slight growth in the spring once a year was noted by the plant physiologist, who took advantage

flower, root, growth, rubber content, etc., etc. Dr. McCallum, in whose desert laboratory the most of this work was done, published a statement in "Science" long ago that he had found 125 different species. He told the writer that his records showed to date more than 900 different guayule growths and that the list was still growing.



LEVELING FOR GUAYULE PLANTING.

of it in this way. He furnished a simulated spring and the guayule responded, then before it could settle back for months of rest, another spring was sprung. If done at the exact psychological moment the plant responds. Again and again was this done, and the plant, having no method of checking up its rapidly recurring seasons, attained a lusty growth in record time. By this method the fifteen-year development that the shrub was accustomed to, and that it prefers, was accomplished in four years. This, by the way, beats first crop *Hevea* by two years.

VARIETIES OF SHRUBS.

One of the very interesting preliminaries in guayule cultivation was the study of varieties. To the average guayule expert

THE RUBBER CONTENT.

From the beginning of the experiments much care was taken in the analysis of thousands of shrubs to learn all that could be learned concerning the rubber content in them. First of all, the portions of the plants containing rubber were cataloged. This was important in determining whether it was wiser to uproot the plant for the sake of the rubber in the roots or to cut it off above the roots, leaving them to produce new growths. With cultivation in sight, however, there was much more to be learned than the portion of the plant richest in rubber. That was whether the ten per cent of rubber, the rough estimate of the whole rubber content, was at all variable. The results of the



GUAYULE SEED BEDS.

there were but two types of plants, the *Parthenium Argentatum*, which is the rubber producer, and the Mariola, *Parthenium Icanum*, which much resembles it but contains no rubber. From the beginning, the botanists began to segregate the rubber-producing species into a great variety of types. The new species, the *Parthenium Lloydii*, named after Professor Francis E. Lloyd, is one of these varieties, characterized by differences in leaf,

analyses were so astounding that they were done several times over. The facts tabulated showed that there was a wide difference in the amount of rubber in the different shrubs. This ran from one per cent to ten per cent to twenty per cent, and in rare cases to twenty-seven per cent. Manifestly seed from the one per cent would not pay to collect, much less to plant. The poorer qualities were therefore thrown out and plants that were big pro-

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ducers were selected as seed bearers for the future cultivated shrub.

QUALITY INVESTIGATION.

Guayule rubber has not been considered to be of the highest grade. When it first came upon the market its resin content was so high and it was so soft that it was accepted with reluctance. Indeed certain importers for years refused to allow that it was rubber at all and scornfully dubbed it a substitute. In time, however, by new methods of extraction, and by deresination, it came

SOLVING THE LABOR PROBLEM.

In an age when almost everything is done by machinery, the growing of india rubber, particularly the tapping and gathering, is hand work entirely. Without vast gangs of coolies the production of rubber in any considerable amount seems impossible. With the cultivation and collection of guayule rubber, however, machinery takes the place of men, and in almost every part of the work. The preparation of the fields is done by disk harrows drawn by tractors. The planting by specially built machines,



A FIELD OF CULTIVATED GUAYULE.

into its own as a valuable crude rubber and was used by the millions of pounds.

The searchers for guayule secrets, when they began to test the quality of the rubber in different plants, learned some more surprising truths. Some of the shrubs gave simply a black resinous paste that contained not enough rubber for extraction. Others contained rubber with say twenty per cent of resin, the type that the whole trade is familiar with. A few, however, yielded a firm hard product, low in resin and showing to a remarkable degree the "nerve" that is so characteristic of the best crude rubber.

similar to tobacco planters that plow four furrows, set the plants at the proper intervals, cover them in and pack the earth about the roots. One machine plants eighteen acres a day. The cultivating is also done by machinery. For gathering there are two systems; one cutting the rows down by a harvesting machine, the other plowing the plant out root and all, as in the harvesting of the sugar beets. The extraction of the rubber is also, of course, wholly mechanical. In the event that the rubber is deresinated, that is also done by machinery and follows the well-known process.



CONCRETE BUNGALOWS OF A GUAYULE PLANTATION.

The result was, of course, that the best producers were planted as seed bearers for cultivated guayule.

Nor was that all. By hybridization, that is the wedding of the big producers with the best producers, plants were produced that had the good qualities of each. Therefore with a big, best producing seed stock the real cultivation of guayule was well on the way toward success.

Guayule growing in a large plantation involves a laboratory for examining and testing plant and product, a small greenhouse for seed experiment and hybridization, outdoor plants for seed bearing, seed beds protected by lattice windbreaks, an irrigation system, planting and harvesting machinery, an extraction plant, and above all, knowledge of the plant, and how to handle it, and plenty of capital.

Financing Rubber in Brazil.

By Miguel P. Shelley.

IN THE INDIA RUBBER WORLD of April 1, 1916, page 336, the financing of plantation rubber was described. The product coming from Brazil is financed in very much the same way. Rubber is bought in Brazil, transported to this country and delivered to the manufacturer without any expense on the importer's part if the bank considers him sufficiently reliable to issue a letter of credit in his favor.

The procedure followed in obtaining this letter of credit is similar to that for plantation rubber. Identical forms are used in both cases. Identical guarantees are given to the banks by the importer, and the same documents illustrated in the article "Financing Imports of Plantation Rubber" are signed by him.

A difference in the financing of Brazilian rubber occurs not here, but in Brazil. The whole question then arises as to how rubber is financed in Brazil.

There are three classes of local merchants sending rubber to the United States, viz.:

1. Branches of American firms. Each of these has a different manner of financing rubber. Each has its own policy. One firm sends ready cash to buy the rubber, another may send a letter of credit, still another may be occupied in banking, in collecting for American merchants, etc., and so have Brazilian currency with which to make purchases.

2. Brazilian establishments dealing in rubber. They conduct their transactions by means of letters of credit. But since the currency is not English sterling, as in Ceylon, the Brazilian merchant must therefore have the amount of his letter of credit converted into Brazilian currency.

3. Local merchants who receive rubber from the cities of the

interior prefer to send it on consignment to a New York commission house rather than sell to a Brazilian exporter. Generally they draw 80 per cent of the value of the rubber when shipped, leaving it to the American commission house to look out for their interests. The commission house sells the rubber to the best advantage and settles with the Brazilian afterwards.

In Brazil, just as in the Orient, the rubber dealer can receive his money when he is able to sell the drafts authorized by the letter of credit. The only difference here is that in order to obtain Brazilian currency he must sell the drafts to firms which buy English currency, and consequently must accept the rate of exchange offered, which is regulated by supply and demand. The Brazilian rubber dealer loses money in the transaction in this way. At the time he makes a deal he knows nothing of what the prevailing rate of exchange will be when he can collect his drafts. This, then, becomes a speculation.

Let us suppose that Jones & Co., New York, are rubber importers dealing with the firm of Antonio Pereira, of Pará. A manufacturer in the United States, for example, makes inquiry of Jones & Co. as to whether they can sell 20 tons of Upriver fine, at 75 cents per pound, to be delivered within the next three months. Jones & Co. immediately cable Antonio Pereira a firm offer of 70 cents per pound for 20 tons of rubber to be delivered during the months of September, October and November, f. o. b. New York, leaving 5 cents as a margin for extra expenses, profit, etc. Let us say the inquiry was made early in September. Mr. Pereira, having made his calculation as to the possibility of obtaining rubber and as to the price he may have to pay, together with the quantity available at that particular time, speculates on

<u>SPECIMEN AGREEMENT</u>	
Received from you the Letter of Credit of which a true copy is on the other side,	
I hereby agree to its terms, and in consideration thereof I agree with you to provide in New York, twelve days previous to the Maturity of the Bills drawn in virtue thereof, sufficient funds in cash, or in Bills on London satisfactory to you, of not exceeding sixty days' sight, and endorsed by me to meet the payment of the same with three-fourths ^{one-half} per cent commission and interest as hereinbefore provided, and I undertake to incur at my expense, for your benefit, against risk of Fire or Loss, all property purchased or shipped pursuant to said Letter of Credit, in Consideration satisfactory to you.	
I agree that the title to all property which shall be purchased or shipped under the said credit, the bills of lading thereof, the policies of insurance thereon and the whole of the proceeds thereof, shall be and remain in you until the payment of the bills referred to and of all sums that may be due or may become due on said bills or otherwise, and until paid the payment of any and all other indebtedness and liability now existing or now or hereafter created or incurred by me to you on any and all other transactions now or hereafter created or incurred by me to you on any and all other transactions now or hereafter created or incurred by me to you on any and all other transactions now or hereafter created or incurred by me to you on any and all other transactions now or hereafter created or incurred by me to you, with authority to take possession of the same and to dispose thereof at your discretion for your reimbursement as aforesaid, at public or private sale, without demand or notice, and to charge all expenses, including commission for sale and guarantee.	
Should the market value of said merchandise in New York, either before or after its arrival, fall so that the net proceeds thereof (all expenses, freight, duties, etc., being deducted) would be insufficient to cover your advances therewith plus commission and interest, I further agree to give you on demand any further security you may require, and in default thereof you shall be entitled to sell said merchandise forthwith, or to sell "to arrive," irrespective of the maturity of the acceptance under this Credit. I being held responsible to you for any deficit, which I bind and obligate myself to pay you in cash on demand.	
It is understood that in all payments made by me to you in the United States, the Pound Sterling shall be calculated at the current rate of exchange for Bankers' Bills in New York on London existing at the time of settlement, and that interest shall be charged at the rate of five per cent per annum, or at the current Bank of England rate in London if above five per cent.	
Should I anticipate the payment of any portion of the amount payable, interest is to be allowed at a rate one per cent under the current Bank of England rate.	
In case I should hereafter desire to have this credit confirmed, altered or amended (which will be at my expense and risk), I hereby agree to hold you harmless and free from responsibility from errors in coding, whether on the part of yourselves or your Agents, here or elsewhere, or on the part of the cable companies.	
This obligation is to continue in force, and to be applicable to all transactions, notwithstanding any change in the composition of the firm or firms, parties to this contract or in the use of this credit, whether such change shall arise from the accession of one or more new partners, or from the death or cessation of any partner or partners.	
It is understood and agreed that if the documents representing the property for which the said Credit has been issued are surrendered under a trust receipt, collateral security satisfactory to the Company, such as stocks, bonds, warehouse receipts or other security, shall be given to the Company, to be held until the terms of the credit have been fully satisfied and subject in every respect to the conditions of this agreement.	
It is further understood and agreed in the event of any suspension, or failure, or assignment for the benefit of creditors on my part, or of the nonpayment at maturity of any acceptance made by me, or of the nonfulfillment of any obligation under said credit or under any other credit issued by the ----- Trust Company ----- on my account, or of any indebtedness or liability on my part to you, all obligations, acceptances, indebtedness and liabilities whatsoever shall therupon, at your option then or thereafter converted, without notice, mature and become due and payable.	
It is understood and agreed that you shall not be held responsible for the correctness or validity of the documents representing shipment or shipments, nor for the description, quantity or quality of the merchandise declared therein.	
(Signed) Jones Co.	

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the future price and bids 72 cents. Thus the transaction is closed.

He speculates in that the price may go up or down by the time he needs the rubber to cover the sale. Suppose a dealer sets a price of 70 cents per pound, after making his calculations for a certain time when he intends to pay \$5400 per kilo in Brazilian currency, to the producer or seller, this being in accordance with the rate of exchange of \$4200 per dollar. However, when the time comes for covering the sale, the exchange drops to \$3800 per dollar and he loses 400 reis on his bills when they are exchanged, at more than 10 cents per dollar. The case may turn out to be quite the contrary, however, and he may gain as much as 10 cents per dollar.

Of course, competing rubber dealers are in the same identical position with regard to the rate of exchange. This means that the price of rubber in Brazil varies with the rate of exchange; that an increase in the rate of exchange results in a decrease in the price of rubber, and *vice versa*. What the Brazilian dealer is losing in exchange has to be made up by buying the rubber at a low price. The fact is, however, that the competition is keen and every dealer speculates. Some of the dealers may have sold at a fair rate of exchange and so can offer a higher price for the rubber, which is sold immediately upon its arrival from the interior. The speculator finds himself in a very tight place if he is obliged to cover his sales at such a time.

Antonio Pereira, of Pará, having closed his deal with Jones & Co., of New York, waits for an opportune time to execute his order. He has an option of three months' time, during which he watches the market and the exchange closely. When these both incline favorably toward his calculated price he buys the rubber. Let us suppose he paid \$4500 per kilo for the 20 tons of rubber, which, according to his calculations, would bring him 71 cents per pound when he exchanges his bills. Until he can actually get Brazilian currency for his bills, the rubber dealer does not know what the exchange will really be, for a considerable time may elapse between the buying of the rubber and the date of shipment.

In this connection it must be remembered that he can exchange his bills only when the goods are shipped and he can produce a bill of lading. During this time the rate of exchange may go up or down and he may lose or gain.

Mr. Pereira is consequently very much pleased, after so much worry about the market and the exchange, when he is finally able to ship the 20 tons of rubber to Jones & Co., to New York.

The rate of exchange having been agreed upon between Mr. Pereira and the concern which buys his "paper" (generally the bank through which the letter of credit was sent), he draws a draft in triplicate at 90 days' sight for the amount warranted him by the letter of credit. Then he attaches all the documents, which comprise the consular invoice, and all negotiable copies of the bill of lading. Having sold his "paper" at the prevailing rate of exchange for such drafts, Mr. Pereira has thus received his money, but neither Jones & Co., nor the New York bank has yet advanced any payment in the transaction.

The bank in Pará is required by the terms of the letter of credit to send to its New York branch one bill of lading with the consular invoice attached to the signed draft. A duplicate draft, duplicate bills of lading and insurance certificate are forwarded to London if the Pará bank is a branch of a British concern.

All the documents, of course, are made out in the name of the bank which bought the draft. As soon as they reach New York the bank advises Jones & Co. of the arrival of the draft, and being accepted, it has 93 days to be matured (three days of grace being allowed in London).

If Jones & Co. should so desire, they may pay cash at any time before the draft is due and receive an allowance of interest according to the agreement with the banker at the time of issuance of the credit. If this is not done, the rubber is warehoused in the bank's name until the obligation is met.

In many cases when the importer is of good standing the

bank delivers the rubber to him before the settlement of account. The goods are then relieved on a trust receipt. By this method the importer is permitted to remove the rubber and sell it. This trust agreement in no way interferes with the obligation to meet the draft when due in New York.

Finally, when the draft is due the amount is converted at the current selling rate of exchange for bankers' checks on London on the date the draft is due in New York. Jones & Co. pay the amount drawn by the letter of credit plus the commission agreed upon, usually $\frac{1}{2}$ to $\frac{1}{4}$ of 1 per cent per month of the tenure of the draft, and the transaction is ended.

This system of credits in the rubber trade has proved to be very beneficial to both the seller and buyer. The seller is sure of obtaining his money immediately on delivery of the goods to the steamship company, and the buyer has the assurance that the goods must be shipped before the seller receives payment.

PROPOSED PURCHASE OF THE DUTCH WEST INDIES.

TO THE EDITOR OF THE INDIA RUBBER WORLD:

DEAR SIR:—I was much interested in the correspondence from Dutch Guiana published in your issue of May 1, 1918, in regard to the distress in that country due to its dependence upon the United States for its food supply. I should like to get some further information from the writer. Will you kindly give me the name and address of the correspondent in Dutch Guiana or, if you do not wish to reveal that, would you forward a letter to him sent in your care?

We have several times pointed out in "The Independent" that the purchase of the Dutch possessions in the West Indies would be of very great benefit to all three of the parties concerned, the United States, the Netherlands, and the inhabitants of Surinam and the islands. The proposal seems to have been favorably received both in Holland and Guiana, as you can see from the enclosed clipping. The remarks of your correspondent show that the need of such action is pressing.

Very truly yours,

EDWIN E. SLOSSON, Literary Editor.

The clipping referred to includes a letter from Barkley Percival, our regular correspondent at Paramaribo, Surinam, who writes in part as follows:

In "The Independent" of July 21, 1917, a remarkable article, entitled "Let Us Buy the Dutch West Indies," was published and was universally read with the greatest satisfaction when it appeared in the local papers. For myself, I am convinced that every Surinamer would hail the day when the Stars and Stripes should wave over Dutch Guiana.

B. Boekhoudt, retired District Commissioner of the Dutch West Indies, is also quoted as stating in a pamphlet on the subject that the purchase would give equal satisfaction to Hollander, American and Surinamer. He reminds his readers that the inhabitants would remain under a just, enlightened government, and points out that with the purchase price the Netherlands could cover the expenses entailed by the present crisis, and the heavy burden of taxes under which the Dutch people now stagger could be diminished. He further asserts that if, in the contract of sale, the United States guaranteed to the Netherlands the undisturbed possession of the Dutch East Indies against outside aggression, the transaction would become one of the greatest importance to the Netherlands and to the Dutch East Indies.

That this opinion is not shared by some other Dutch writers is shown by a recent article in the "Indische Mercuur," published in Holland, which discusses the other side of the question. The article treats mainly of Curaçao, pointing out that the position of this island with regard to the Panama canal should make it very valuable with the return of peace and consequent resumption and extension of traffic with the South American countries. The other islands contain mineral deposits, the exploitation of which may give worth-while results. On the whole, both as concerns the material value of the possessions, which have not been

properly exploited and as touches Holland's honor, the writer is strongly against the sale of these possessions.

In a note, the editor of the periodical states that at a recent lecture held in Leiden, the question was put to the audience whether the sale of the colonies was permissible. The majority answered in the negative.

JAR RINGS FOR COLD-PACK PRESERVING.

IN the cold-pack method of preserving green vegetables, last year's considerable spoilage has proved that the quality of the flat rubber jar ring that is used as an air seal between the jar and the cover has much to do with the successful preservation of the jar's contents. Many housewives who last autumn canned large quantities of vegetables by this new and approved method, discovered later that when the rings were not what they should have been the contents of the jars either soured or were denatured with a "rubbery" taste. They had assumed that any rubber jar ring was suitable, but many of the rings used came with the jars and were intended only for the old style of canning by the open kettle method, where the glass jar and the rubber ring did not come in contact with the sterilizer. This method was used almost exclusively for fruits, because there was until recently no well-known method of preserving vegetables and meats successfully in the home.

The cold-pack method advocated last year by the Government is a thoroughly satisfactory one, but it requires the jar to go into the boiling liquid, and many of the rings in use were of such inferior quality that they were ruined in the process, although they would probably have fulfilled the purpose for which they were intended. The experts of the Department of Agriculture have been investigating the part which such inferior jar rings played in last year's spoilage of canned garden products, and estimate that 35 per cent of the total loss was due to this cause.

The successful canning of vegetables demands jar rings made especially for the cold-pack method, and all others should be labeled "Not suitable for cold-pack preserving." In composition, cold-pack jar rings must combine freedom from offensive tastes with firmness and elasticity, and power to undergo hard boiling for several hours. It is, indeed, a problem to test the chemist's ingenuity, but so great is the value of this method, and so acute the need of saving all surplus fruit and garden produce, that leading rubber manufacturers, in cooperation with federal officials, are eager to place on the market rings that meet every requirement. The experience gained by the Government investigators has recently been formulated into a set of standard requirements for rubber jar rings which have been published by the Department of Agriculture, States Relations Service, Office of Extension Work North and West. These requirements have been adopted by leading manufacturers, so that the loss from this cause should be almost entirely eliminated during the coming season. The requirements follow:

REQUIREMENTS OF RUBBER JAR RINGS.

FOR USE IN THE ONE-PERIOD COLD-PACK METHOD OF CANNING.

The one-period cold-pack method of home canning requires a rubber ring essentially different from that commonly used in the old hot-pack method of home canning. Investigation shows that many of the rings upon the market are unsuitable for the cold-pack method, being unable to withstand the long periods of boiling required in the canning of vegetables by this method.

Practical canning tests have indicated that rubber rings for use in this method should meet the following requirements:

INSIDE DIAMETER.

The ring should fit closely, requiring a little stretching to get it around the neck of the jar. For standard jars the ring should have an inside diameter of 2-1/4 inches.

WIDTH OF RING OR FLANGE.

The width of the ring or flange may vary from 1/4 to 12/32 of an inch. The tests made showed that fewer cases of "blow-out" occurred when the flange was 10/32 of an inch.

THICKNESS.

Rubber rings as found on the market may vary from 1/18 to 1/10 of an inch in thickness. Tests showed that 1/12 of an inch in thickness is sufficient to take up the unevenness in the jar and still not so thick as to make it difficult to place the cap or adjust the bail.

TENSILE STRENGTH.

Cold-pack canning requires a rubber ring that is tough, does not enlarge perceptibly when heated in water or steam, and is not forced out of position between the top and the jar by slight pressure within the jar. Practical canning tests with different types of jars and kinds of rings indicated that the rubber of which the rings are made should have a tensile strength varying from 275 to 330 pounds. The tensile strength is an index of the ability of the ring to stay in position during the process of sterilization. The higher the tensile strength, the less chance there is for the ring to blow out.

PRACTICAL TESTS FOR RUBBER JAR RINGS.

TENSILE STRENGTH TEST.

In making the tensile strength test, the rubber used in manufacturing the ring should be "tubed out" or "buffed down" to a ring that is about 5/32 of an inch square. This ring is placed upon two spindles and pulled, and the number of pounds required to break the ring is registered on the scale. The tensile strength of the ring is then figured on the basis of one square inch cross-section. The tensile strength given in the table in the last paragraph indicates the tensile strength, not of the ring but of a piece of rubber one inch square.

HOT WATER BATH TEST.

Some rubber rings may have the standard measurements as to thickness, width of flange, and inside diameter and still be unfit for use with the one-period cold-pack method of canning. In the practical test, three jars should be selected, one having a very even top, well fitted; the second having a top that is somewhat warped, and the third having a very poorly fitted top. The jars should be filled with boiling water; the rubber ring placed in position, and the jars placed in the water bath under canning conditions and boiled for four hours. At the close of the period, the jars should be removed from the bath, the clamp tightened down, and permitted to stand over night. The next day the rubber rings should be removed from the jars and examined carefully. The indentation of the top on the jar ring should be clear and distinct and show no signs of movement of the rubber ring; the ring should still have much of its strength and elasticity and should show no signs of cracks or cuts resulting from the vacuum on the jar.

STEAM PRESSURE TEST.

The method of fitting the rubber rings to the jar should be followed as in the previous test. The jars should be placed in a steam pressure retort and sterilized for one hour under ten pounds of steam. At the close of the period, the pressure should be permitted to drop naturally and the jars should be removed in the same manner that canned fruit is ordinarily removed from the steam pressure retort. The clamps should be pressed down and allowed to stand over night. The next day the rubber rings, upon examination, should show the same results as in the first test.

OVEN OR DRY HEAT TEST.

Many rubber jar rings will stand when first manufactured, but upon aging become unfitted for home canning. In order to apply an aging test, tie three new rubber rings to a string and suspend them in the oven at about 270 degrees dry heat;

allow them to stand there for three hours. At the end of that time the rubber should show small cracks upon the surface and be slightly creased when bent back upon itself.

SUMMARY OF REQUIREMENTS.

The following table summarizes the requirements of rubber rings suited to the one-period cold-pack method of canning as described in Farmers' Bulletin 839:

Standard Types of Jars.	Inside Diameter. INCHES.	Flange. INCH.	Thickness. INCH.	Tensile Strength. Pounds.
Mason, Lightning (glass top and bail).	2 1/4	10/32	1/12	330
New improved Mason.....	2 1/4	1/4	1/12	275
Large mouth Mason.....	3 1/8	10/32	1/12	330
Old style Lightning.....	2 1/4	9/32	1/12	275
Eureka	2 1/4	1/4	1/12	275

STANDARD SPECIFICATIONS HELP TO WIN THE WAR.

IN a recent address to the Western Association of Electrical Inspectors, A. R. Smith, vice-president of the Underwriters' Laboratories, showed conclusively that the work of this organization in cooperation with manufacturers, electrical inspectors and others in the preparation and operation of standards has had quite a significance in connection with carrying on the war.

Several members of the staff, he stated, had devoted a great deal of time in 1914 to a careful analysis of existing specifications for cotton rubber-lined fire hose, such as is used in municipal fire departments and also in private plants. An agreement was reached with the manufacturers and others interested officially as to a common specification which was put into force and gradually applied in the factories of twelve principal manufacturers of fire hose in this country. On August 15, 1917, the Quartermaster's Department of the United States Army announced the immediate need of fire hose in the new training camps. Its attention was called to the standards which Underwriters' Laboratories had prepared and promulgated. As a result twelve manufacturers were asked when they could begin to ship fire hose conforming to this specification and labeled by Underwriters' Laboratories. On August 22, seven days after the department realized its need, the twelve factories began to ship, and before November 15 had shipped in excess of one million feet of 2 1/4 inch, single-jacket fire hose to each one of the sixteen principal cantonments for the National Army and to each one of the training camps for the National Guard. The manufacturers of fire hose were prepared, because this standard had been worked out long previous to the war. Although it is the policy of the Government to send its own inspectors to every factory where government materials are being manufactured, it was not necessary in this case for the Government to enlist, train and equip new inspectors in twelve different factories, for the inspectors of Underwriters' Laboratories were already active in these plants, examining and testing fire hose to be shipped to the municipal fire departments and to the plants of private property owners. As a result, the manufacturers were able to start in immediately with the production of hose along a schedule with which they were already familiar, having the work supervised by an inspector already acquainted with the peculiarities of fire hose and the things which it is necessary to watch in testing it. Each 50-foot length of this more than 1,000,000 feet of fire hose was subjected to a pressure of 300 pounds at the factory, its elongation from ten pounds up to 300 pounds being measured, lengths having excessive elongation or otherwise not conforming to specifications being rejected. In one case an inspector one morning turned down 20,000 feet of hose and the manufacturer had no trouble in convincing himself that the inspector's action was proper.

Similarly, in the case of insulated wires, at the beginning of the war the Navy Department decided it wanted 3,000,000

feet of 14 duplex, lead-covered wire, and it wanted it quickly and tested. The manufacturers of insulated wire have an active, growing organization, cooperating in a great many matters. A chairman of one of the committees of that organization pro rated the entire footage of lead cable desired to the manufacturers of lead cable equipped to produce that particular kind of material and pro rated one hundred per cent of the inspection of the finished cable to the Underwriters' Laboratories. There again preparedness through standards of Underwriters' Laboratories was of some assistance in carrying on the war, since it was not necessary for the Navy to train a crew of new inspectors to go into 26 factories and learn how to inspect goods at the cost of delay in shipping them out. Inspectors already at the wire plants were thoroughly familiar with all of the problems in examining and testing lead-covered cable, and the material was shipped from the factories as soon as it was practicable to make it and was delivered to the Navy Department with the least possible delay.

EXPORTS TO GREAT BRITAIN, FRANCE, ITALY AND BELGIUM.

IN order to prevent the useless consumption of materials and inspectors, A. R. Smith, vice-president of the Underwriters' may not be exported, and for the purpose of saving tonnage by prohibiting the exportation of articles which are not necessary to the essential requirements of the country of destination, an order of the War Trade Board, effective on and after May 15, requires shippers before filing applications for licenses to export any commodity to the United Kingdom, France, Italy or Belgium to obtain thereon the written approval of the mission in the United States at Washington, District of Columbia, of the country to which the exportation is to be made. To secure this approval, applicants should forward their applications, duly executed in triplicate on Form X with proper supplemental sheets attached thereto, including Sheet X-11 or X-12, as may be required.

Applicants will be required to agree with the War Trade Board not to purchase nor acquire for export nor take any steps in the process of producing, manufacturing or fitting for export the articles specified in the application until an export license has been duly granted.

Exporters of acetone, carbon bisulphide, all chrome and manganese compounds, copper wire and cable, will also be required to agree that, after export licenses have been issued, they will not make any purchase nor acquire for export, nor take any steps in the process of producing, manufacturing, or fitting for export the articles specified in the application unless they first obtain the written approval of the United States War Industries Board.

If, prior to May 15, 1918, any of the articles specified on such applications were purchased or acquired for export, or if any steps were taken in the process of producing, manufacturing, or fitting for export such articles, applicants must agree that, after export licenses have been issued, exportation thereunder will not be made until the written approval of the United States War Industries Board has been received.

On July 1, 1918, all outstanding licenses granted on or before May 14, 1918, expired. Any goods not then exported against such licenses may hereafter be shipped only if licenses are secured after being applied for as above set forth.

QUARTERMASTER'S DEPARTMENT BUYERS.

The latest announced list of buyers for the Quartermaster's Department of the Army includes the names of W. E. Piper for rubber boots and of A. W. Lawrence for rubber footwear.

War News of the Rubber Industry.

Government Plans Coordination of Industries—Barred Industrial Zone in the Eastern States—The Need of Americanization in Rubber Mills—The Third and Fourth Liberty Loans—United States Footwear Contractors—Female Labor in Rubber Mills—The Baseball and Bat Fund—Books and Magazines for Men in Training—Alleged Graft in Army Raincoat Contract—The Government Gas-Mask Plant—Washing the I. W. W.—War Savings Stamps in Porto Rico—Rubber Surgical Goods Work Wonders in France—Army Procurement Offices in New York—Fire Prevention Section of the War Industries Board—Service Notes and Personals—Martyrs to the Cause of Liberty.

GOVERNMENT PLANS COORDINATION OF INDUSTRIES.

A n immediate survey throughout the United States is to be made, in order to find out which industries not now doing war work may be utilized for that purpose, also which industries already engaged on work for the Government are able to take on additional contracts or increase their production of munitions and war supplies.

To this end the War Industries Board has established a Resources and Conversion Section, with Charles A. Otis, former president of the Cleveland Chamber of Commerce and a member of the board of directors of the Chamber of Commerce of the United States, as chief.

The country has been divided into twenty regional groups, each of which will be organized through its commercial associations. One organization in each region has been selected to take the initiative in bringing about a definite organization.

Every type of industry, whether represented in commercial organizations or not, will be asked to cooperate. The regional system is intended to supplement the work of the National War Service Committees of the industries, some of which are already effectively cooperating with the Government, while others are in process of formation. Many industries are not so organized as to permit representation by a National War Service Committee, and by the regional system it is purposed to look after the requirements of these scattered industries and provide a means by which greater impetus can be given to increasing production in every part of the country. It is believed that this will result in great measure in preventing further dislocation of labor, new housing programs, unnecessary expansion of plants, and freight congestion. It will be an object also to provide work for industries whose normal output is being reduced without their resources being employed in new directions.

The Government is not attempting to segregate and define essential and non-essential industries, but it is the aim of the Priorities Board to supply to direct and indirect war industries as nearly as possible 100 per cent of their requirements. This will very substantially reduce and in some cases practically exhaust the available supply of basic raw materials entering into the manufacture of many products, and firms thereby affected are encouraged, where practicable, to convert existing facilities and organizations for purposes entitled to preference treatment, thus reducing the damage to industry to a minimum and at the same time relieving some of the war industries that are staggering under abnormal burdens.

BARRED INDUSTRIAL ZONE IN THE EASTERN STATES.

What has been denominated a "red flag" zone within which no more manufacturing plants will be allowed to be established, has been created by the joint edict of the War Industries Board and the Fuel and Railroad Administrations. The restricted area, which comprises the New England States, eastern and southern New York as far west as Binghamton, eastern Pennsylvania as far west as Williamsport and Altoona, New Jersey and Delaware, and eastern Maryland exclusive of Baltimore, will be barred because it is already so congested with steel works, munition plants, factories of all kinds and shipyards that it is practically impossible to secure transportation facilities for existing concerns. This congestion has been progressive during the past six months and the only remedy is believed to be the drastic step that has just been taken.

While it is intended that the restrictions embodied in the new ruling shall be carefully observed, a large measure of discretion will be exercised by the War Industries Board in considering application for extension of existing plants to meet



(C) Committee on Public Information.

AMERICAN SOLDIERS, EQUIPPED WITH RUBBER PONCHOS, ASSISTING A WOUNDED COMRADE TO THE REAR.

the demands of the Government, and in very meritorious cases for the establishment of new plants.

THE NEED OF AMERICANIZATION IN RUBBER MILLS.

At a recent meeting of the Department of the Interior in Washington, District of Columbia, called by Secretary Franklin K. Lane, at which all the leading manufacturing interests and many mercantile associations were represented by executive heads, the necessity of the education and Americanization of the foreign-born within our borders was discussed. This necessity, it was pointed out, has been further emphasized by the war, in that many drafted recruits know so little of the English language that the receipt and transmission of orders is impossible except in their own tongue. There is also danger that the impractical socialistic doctrines of the Bolshevik idealists, which have proved the undoing of Russia, may find a fertile field here in communities where the English language and American ideals are lacking.

Remedial measures on the part of the local public schools were discussed, but of particular importance was the resolution that industries employing large numbers of foreign-born persons should cooperate with local communities and State and Federal governments in carrying on an extensive, intensive, and immediate program of Americanization through education, especially for non-English-speaking adults. It was the tenor of the meeting that English should be taught in the graded schools to the ex-

clusion of all other languages, and that German should be restricted as a cultural study to high schools and colleges; also that all elementary subjects be taught in English only.

There are numerous and very definite ways in which the rubber industry can be of assistance in this valuable propaganda. Every rubber company can at least lend all possible influence to see that there is a proper day and night school provided by the local Board of Education where adult foreigners may have the opportunity to learn English. Every rubber company on purely economical grounds can also well afford to supply an incentive to foreign-born employees to learn rudimentary English by a prompt and proper recognition of the increased value of those in their employ who do so, and by a disposition to treat foreign and native-born operatives alike. Every rubber company can cooperate with the public night schools in enrolling students and adjusting hours and night shifts to make attendance possible. Many of the larger companies can well afford and will find it greatly to their advantage to conduct classes in their plants.

Much has already been accomplished by rubber companies along these lines, as outlined in THE INDIA RUBBER WORLD for September 1, 1917, but the need of still greater activity is apparent to all who look to the future and have the national welfare at heart, wherever such educational work has been undertaken, whether in the rubber or other industries, the results have amply repaid the trouble and expense.

THE THIRD LIBERTY LOAN.

The following letter has been received by the Editor from Bert Strong, governor of the Federal Reserve Bank of New York:

Mr. Henry C. Pearson, Editor,
THE INDIA RUBBER WORLD,
25 West 42nd St.,
New York City.

Dear Sir:

The Committees appointed through the medium of the Federal Reserve Bank at the request of the Secretary of the Treasury have again demonstrated their enthusiasm, ability and patriotism in the Campaign for the Third Liberty Loan. The resulting over-subscription in the Second Federal Reserve District is due to their effective and unremitting efforts, splendidly organized and maintained.

This work in placing the great National Loans has provided to those of us who are unable to serve with the armed forces of the United States an opportunity to be of value to the Government at home in the vast struggle for a common cause. In behalf of the Liberty Loan Committee of this District and the Federal Reserve Bank of New York, it gives me great pleasure to record your patriotic services in assisting the Government in its task of placing the Third Liberty Loan.

Yours very truly,
BERT STRONG, Governor.

* * *

H. Muehlsten & Co., Joseph Chalfin, William H. Cummins & Co., and The Loewenthal Co., are rubber scrap dealers of New York City who contributed liberally to the Third Liberty Loan, but whose names did not appear in the list published last month in THE INDIA RUBBER WORLD.

THE FOURTH LIBERTY LOAN.

Tentative plans for the Fourth Liberty Loan, as recently announced by the Secretary of the Treasury, include the following: amount, at least \$6,000,000,000; interest rate, 4½ per cent; campaign to open early in October; denomination of bonds to be the same as for the Third Liberty Loan.

UNITED STATES FOOTWEAR CONTRACTORS.

The rubber footwear manufacturers who have contracts for boots and high buckle arctics for Army and Navy requirements of the United States Government, have placed a priority on these goods and have entirely discontinued the production of heavy goods for civilian customers, utilizing all their workers

on similar lines to rush forward the goods needed for the furtherance of the war. The companies now working on these contracts are the Apsley Rubber Co., Hudson, Massachusetts; Beacon Falls Rubber Shoe Co., Beacon Falls, Connecticut; Bourn Rubber Co., Providence, Rhode Island; Converse Rubber Shoe Co., Malden, Massachusetts; Firestone Tire & Rubber Co., Akron, Ohio; The B. F. Goodrich Rubber Co., Akron, Ohio; Goodyear Rubber Co., New York City; Hood Rubber Co., Watertown, Massachusetts; La Crosse Rubber Mills Co., La Crosse, Wisconsin; Lambertville Rubber Co., Lambertville, New Jersey; Mishawaka Woolen Co., Mishawaka, Indiana; United States Rubber Co., New York City.

FEMALE LABOR IN RUBBER MILLS.

The employment of women in various departments of rubber manufacture formerly operated exclusively by men increases steadily and with promising results, even in the building of tires. Months before this country entered the war the United States Tire Co., New York City, foresaw the difficulties of filling vacancies caused by draft and enlistment, and as early as November, 1916, began training women in the light work of finishing tires, to which they are well suited. The problem of teaching the women to do men's work was not as difficult as it might have been twenty years ago, because of the vast improvement in man-



WOMEN TIRE MAKERS.

ufacturing methods. In tire factories, processes have been developed to such a point by the wide adoption of tire-building machinery that the heavy labor of former hand-building methods has been eliminated, the human element has been subordinated, and tires of uniform quality are turned out with the chance of human error reduced to the minimum. Hundreds of women are now doing light work successfully in the Detroit factory of the United States Tire Co., releasing many men for the heavier factory jobs and proving themselves as capable and willing as their British sisters in meeting an unprecedented emergency.

THE BASEBALL AND BAT FUND.

Among the very commendable movements of the war deserving hearty support is the Clark C. Griffith Ball and Bat Fund to furnish baseball equipment to the boys in active service here and abroad. The stimulation of more interest in "the great American game," and the encouragement of the organization of numerous teams have many attendant benefits. This is especially true of engineering regiments, whose work behind the lines, although necessary, is exceedingly monotonous in a country where economic conditions are such that few amusements are available. It has been found that baseball games provide a wholesome influence that will do more towards keeping the men in good spirits and away from cafes and other evil influences than anything else that could be started. Letters from command-

ing officers show that the military organizations have much appreciated the consignments of balls, bats, etc., already forwarded, and requests for more equipment continue to arrive.

Clark C. Griffith, manager of the Washington Baseball Club, Washington, District of Columbia, is treasurer of the fund, and investigation indicates that all money contributed will be honestly spent for the purpose for which it is asked.

BOOKS AND MAGAZINES FOR MEN IN TRAINING.

The American Library Association, under the general direction of Herbert Putnam, Librarian of Congress, is doing an excellent



CAMP LIBRARY, CAMP DIX, WRIGHTSTOWN, N. J.

work in organizing and supervising camp libraries in the sixteen cantonments where our great national armies are being trained. Public-spirited individuals, companies, and organizations throughout the country have been generous in their support, with the result that books and magazines are pouring into the camp reading rooms at the rate of thousands weekly. Municipal, state and college libraries have given and lent generously; clubs, trade associations and industrial companies of many sorts have collected second-hand books, and publishers have gladly given quantities of new books and many magazine subscriptions, so that there is fiction and light reading aplenty and also a goodly amount of miscellaneous technical matter that each man may keep in touch with the progress of the trade or profession from which he came. Numerous rubber companies have lent their assistance for the benefit of former employees, and THE INDIA RUBBER WORLD is to be found regularly in every cantonment.

The library at Camp Dix, Wrightstown, New Jersey, is typical of the others. Over 28,000 books have been received there thus far. The camp library now has over 16,000 volumes on its shelves; the Y. M. C. A. and K. of C. have 3,000 or 4,000, and there are circulating libraries of 40 or 50 books in 84 different barracks. Thousands of men are improving spare moments in these libraries to the benefit of themselves and their country, so that this important work deserves the support of all in a position to help in any way.

ALLEGED GRAFT IN ARMY RAINCOAT CONTRACT.

As a result of efforts of the Department of Justice to eradicate illegal profiteering in war contracts, Lieutenant James C. Staley of the Quartermaster Corps was arrested last month by government agents, on a charge of accepting money from the Truefit Raincoat Co., of New York City. It is reported that this company held a government contract for 50,000 raincoats, contingent on Lieutenant Staley's approval of the plant. The proprietors informed the authorities of the impending irregularity

which, it is said, took place afterward in the presence of witnesses, resulting in the officer's arrest.

THE GOVERNMENT GAS-MASK PLANT.

An assembling plant for the manufacture of gas masks for the American Expeditionary Forces has been established within the control of the Gas Defense Service as a part of the office of the Surgeon General of the United States. Thousands of women are employed, each separate step in the assembling of the masks and the final inspection being their work. Mothers, wives and sisters of men in service act as inspectors because of their vital interest in eliminating all defective workmanship.

Schools have been established to train the women for the minute perfection necessary in an inspection system so complete that no defect will be overlooked, and no opportunities are lost to emphasize the importance of extreme carefulness. Motion pictures of how the Germans use deadly gas fumes and of troops in action during gas attacks are shown every week, and talks are frequently given by soldiers who have but recently participated in gas attacks.

About 5,000 improved gas masks a day are now being made for horses, and it is expected that within a short time every horse with the American forces will be supplied. The new masks are more efficient, economical and readily made than any other known mask. They are odorless after being impregnated with chemicals to neutralize all known gases that affect horses, and possess the distinct advantage that they can be placed securely on the heads of animals which are not wearing harness. The masks are attached by elastic straps.

WASHING THE I. W. W.

The editor of this journal wishes to purge himself in advance from any sympathy with law-breaking or mob violence. Rail-riding, tar and feathers, and the like, as correctives, are to his mind futile and unworthy of law-abiding citizens. The fire hose treatment lately inaugurated in Los Angeles as an antidote for disloyalty, however, has its merits. Perhaps it would not always convert pro-Germans, but to others of the disloyal it appears to be wonderfully well suited.



WASHING A MEMBER OF THE I. W. W.

WAR SAVINGS STAMPS IN PORTO RICO.

In sums varying from 25 cents to \$5, since the middle of January, 1918, the people of Porto Rico have contributed over \$80,000 as their share of the loan to the Government under the Thrift and War Savings Stamps plan. Contrasted with sales amounting to \$3,000 in February, the San Juan office alone sold \$9,000 worth of War Savings Stamps in April, while over \$20,500 worth were sold outside of San Juan during the same month.

RUBBER SURGICAL GOODS WORK WONDERS IN FRANCE.

Wounded Americans and Canadians who have returned to America are telling of the wonders being worked by rubber surgical goods in the hospitals of France and England—of the lives being saved and the suffering being alleviated thereby. And it pleases them mightily to see how plentiful the supply appears to be.

Among the new uses of rubber in this connection may be mentioned that of rubber tissue, which has been found to be far superior to gauze to keep wounds open. Great quantities are being so used.

**FIRE PREVENTION SECTION
OF THE WAR INDUSTRIES BOARD.**

W. H. Merrill, president of the Underwriters' Laboratories, Chicago, Illinois, and well known in the rubber trade, has been appointed chairman of the newly organized Fire Prevention

Section of the War Industries Board of the Council of National Defense, and has assumed his duties in Washington, District of Columbia, for the period of the war. Mr. Merrill brings to the Fire Prevention Section an invaluable experience of 25 years in fire prevention engineering.

The new section is gathering information regarding fire hazards existing in plants manufacturing munitions, and is providing adequate protection where surveys show plants working on

plants working on government contracts to be poorly guarded against possible fire loss. All existing fire prevention officials and organizations are also being enlisted in a cooperative effort to avoid interference with the Government's program. That duplication of effort by fire inspectors or others having a common errand in government buildings and munitions plants may be prevented, licenses or permits will be handled by the Fire Prevention Section.

A further important service to be rendered is that of giving prompt and correct information and advice to all government departments on fire prevention problems.

ARMY PROCUREMENT OFFICES IN NEW YORK.

The Supply and Equipment Division of the office of the Quartermaster General of the Army has opened procurement offices on the third and fourth floors at 109 East Sixteenth street, New York City, for the cotton, woolen, knit goods, wool tops and yarns, and manufacturing branches, with the necessary contracting and office service branches.

The officers in charge are as follows: assistant chief of division, in charge of activities of Textile Sub-Division concerning New York office, Colonel H. J. Hirsch; assistant chief of the Cotton Goods Branch, W. H. Holbrook; chief of the Woolen Goods Branch, H. P. Bonfies; chief of the Knit Goods Branch, Lincoln Cromwell; representative of Wool, Tops and Yarns Branch, Claud H. Ketcham; chief of the Manufacturing Branch, O. D. Frost; chief of the Contract Branch, Colonel H. J. Hirsch; administrative officer, Major F. A. Ellison.



W. H. MERRILL.



LOUIS W. DUMONT



J. JENNER HENNESSY.

SERVICE NOTES AND PERSONALS.

R. V. Hudson, formerly manager of the Chicago office of the Boston Belting Corp., is now Chief of Ordnance at Washington, District of Columbia, while R. R. Bonnell, of the same office, is now in the Gas Mask Department of the Government service at Philadelphia, Pennsylvania. H. G. Sperry has been appointed Sergeant Major of the 348th Machine Gun Battalion, and is stationed at Camp Lewis, Washington.

Pell & Dumont, crude rubber brokers, 68 Broad street, New York City, have a high record for patriotism. Four out of six men forming the original staff are in government service. Sergeant Louis W. Dumont, Company A, 306th Field Artillery, and Frank Tracey, U. S. Ambulance No. 33, are in France. Corporal George S. Schworm is in the Gas Defense service, and Victor C. Blandin is a seaman of the second class, 5th Naval Reserve, Norfolk, Virginia. Mr. Blandin is the son of Lieutenant John J. Blandin, United States Navy, who was killed in the *Maine* disaster at Havana in 1898.

Frederick C. Hood, vice-president of the Hood Rubber Co., Watertown, Massachusetts, has been appointed to the National War Labor Board, replacing L. F. Loree, president of the Delaware & Hudson railroad, who has been given charge of all troop movements by Director-General McAdoo.

James Jenner Hennessy, vice-president of the Crandall Packing Co., Palmyra, New York, enlisted some time ago in the Naval Reserve. He is a son of the late Dr. William James Hennessy, treasurer of the Crandall Packing Co.

J. V. Gilmour, recently appointed assistant advertising manager of the Racine Rubber Co., Racine, Wisconsin, has been called to the colors.

Mellen H. Pingree, formerly connected with the technical and sales ends of the Monatiquot Rubber Works Co., has just received a commission as ensign in the United States Naval Reserve. He enlisted about three months ago as a second-class seaman, was assigned to the Hingham Magazine Station, successfully passed examinations, and was sent to the Naval Cadet School at Harvard University, where he received his commission after having met the requirements for that class of training.

George Dusinberre, a former manager of the Westinghouse Electric & Manufacturing Co. in Cleveland, Ohio, who afterward opened a consulting office for himself, has received a commission as a major in the Ordnance Department of the Army and will be located in Washington, District of Columbia.

New honors have come to R. A. D. Preston, of The Goodyear Tire & Rubber Co., Akron, Ohio, balloon expert. He has been commissioned as lieutenant, senior grade, in the Navy and given charge of the upkeep and repair of all dirigibles and other navy balloons in the United States. He will make his head-

quarters in Washington, District of Columbia, keeping in touch from there with the work at Cape May, Newport News, Pensacola and other points. Lieutenant Preston is one of the pioneers among scientific students of balloon work, and in 1912 served as balloon aide to Ralph P. Upson in the James Gordon Bennett cup races out of Paris, which they won. Two years following this he won an elimination race in America, which gave him the right to compete again in the international event, but the breaking out of the war upset the plans.

David E. Putnam, the American aviator who brought down five enemy airplanes in one day, is a cousin of the Boston correspondent of THE INDIA RUBBER WORLD. He had previously brought down eight, and was officially accredited with six. The report as to the others is now being verified.

Joseph P. Crepeau of Woonsocket, and Frank P. Creighton of Blackstone, employed in the rubber roller department of the American Wringer Co.'s plant, have joined their country's service. Crepeau has enlisted in the Naval Reserves, which he joined at Newport, while Creighton is at one of the National Army encampments.

Charles F. Comire, Jr., of Woonsocket, who previous to his enlistment was employed at the Millville plant of the Woonsocket Rubber Co., has been promoted to the rank of corporal in Company A, 22d Infantry, Fort Jay, New York.

Frank E. Conners of the Albing Rubber Co., Westerly, was among the draftees who left for camp last month.



E. A. PFAFF.

but full particulars have not been forwarded.

Ellsworth H. Hicks, of the American Rubber Co., Boston, is another of the proud fathers of patriotic sons. Ensign Willard E. Hicks, after serving on the U. S. S. *Atlanta*, of the Atlantic fleet, has received orders to report for destroyer work. Ensign Frederick B. Hicks, after five months at Pensacola, Florida, in aviation training, has been ordered to air patrol duty at Chatham, Massachusetts.

Many readers of THE INDIA RUBBER WORLD who remember the late Robert Cowen of the Boston Woven Hose and Rubber Co., will be interested to know that his son, Theodore Davis Cowen, who had been preparing himself for his life's work by studying rubber chemistry at Akron, Ohio, has entered the service as a member of the Ambulance Corps of the Regular Army. Robert Cowen, another son, formerly with The Fisk Rubber Co., Chicopee Falls, Massachusetts, is a chief yeoman in the navy, and is stationed at Squantam near Boston. The third son, Rawson R. Cowen is with the E. H. Clapp Rubber Co., Boston, Massachusetts.



D. E. PUTNAM.

MARTYRS TO THE CAUSE OF LIBERTY.

VINCENT GORMAN resigned from the pay-roll department of the Hood Rubber Co. last October, enlisting in the aviation corps. He was sent to San Antonio, Texas, for training. In January he was granted a furlough and came East to marry Miss Grace Gooding, of the accounting department of the Hood Rubber Co. At the end of his furlough he reported at New York and sailed on the troop-ship *Tuscarora*, which was sunk on its way to Europe, and Mr. Gorman's name is on the list of those lost.

The first employee of the Hood Rubber Co., Watertown, Massachusetts, to lose his life while in the service of his country was Charles H. Madden, of the United States Naval Reserve, who contracted a cold while on duty at Commonwealth Pier, Boston, which developed into pneumonia. After several weeks' confinement in the Marine Hospital he died February 12.

Cecil C. Ables is the first of the 4,600 former employees of The Goodyear Tire & Rubber Co., Akron, Ohio, to be killed in action in France, as recently reported in the official dispatches. He was a member of the 28th Infantry and enlisted September 15, 1916. His star on the company's service flag will be changed from white to gold, in commemoration of his supreme sacrifice for his country. Ables was killed in a charge of Americans on a German trench. He was one of four brothers, all serving in France, of whom two were former Goodyear men, also—Evert, enlisted with the 12th Company, 3d Battalion, First Replacement Regiment, and Grover, with the 5th Machine Gun Battalion.

Lieutenant Orlando M. Lord, Signal Corps, Aviation Section, was killed on June 24, at West Point, Mississippi, when the airplane in which he was making a practice flight fell from a height of 1,000 feet. The observer who accompanied him was severely injured.



LIEUTENANT O. M. LORD.

Lieutenant Lord's home was in Dorchester, Massachusetts, and he was formerly a member of the staff of Poel & Kelly, crude rubber dealers, New York City. In a recent letter to Mr. Kelly he stated that he had qualified as a Reserve Military aviator, with over 100 flying hours to his credit, and had been classified as an "A" pilot, or pursuit scout. His untimely death will be keenly felt by his many friends in the rubber trade.

Corporal Milton Scarborough, 24, has been reported killed in action on the western front in France. He enlisted in the regular army in Akron, Ohio, June 4, 1917, and was assigned to the 10th Regiment, being first stationed at Fort Benjamin Harrison and later transferred to another unit for duty overseas. His home address was given in the casualty list as Childs, Maryland. Scarborough was an employee of The B. F. Goodrich Rubber Co. in 1912.

The response of the employees of The B. F. Goodrich Co., Akron, Ohio, to the appeal of the American Library Association in its week's drive for books for the Army and Navy brought scores of books and magazines to the Goodrich library to be forwarded to the various camps. In order that they may be available for use immediately upon reaching the men they are being prepared for circulation under the supervision of the library staff.

FOOTWEAR AND CLOTHING RESTRICTIONS MAY EFFECT GREAT SAVINGS.

THE recent restrictions regarding shoes and clothing, announced June 16 by the War Industries Board, will have little effect on the rubber shoe and clothing business the present season. In foot wear the manufacturers have already booked all the orders they care to take, and as the restrictions regarding leather footwear apply to next year's goods, it will make no change in this fall and winter's goods.

If, however, such restrictions are extended to apply to leather footwear styles for the fall and winter of 1919, they will effect a material saving to the rubber footwear trade, from manufacturer to retailer. Such action would enable shoe dealers to order their rubber stocks understandingly, and not be faced with the uncertainty of having new shapes in shoes, for which no provisions for rubbers to fit have been made. The rubber manufacturers would benefit by not being obliged to secure new lasts for freak styles of leather shoes sprung upon the market late in the buying season. What this means as a saving to the rubber footwear manufacturers is estimated by a representative of one of the leading companies as well up into the hundreds of thousands of dollars. For the last few years the tendency has been to reduce the shapes of men's rubbers. Two or three years ago it was found that 51 per cent of the men's goods made by this company were on one shape of last and 28 per cent on another, while the remainder were on a variety of lasts of other shapes. Last year the company abandoned making any but the two most popular lasts, and the result is that their orders are practically half-and-half on these.

But in women's shoe styles, novelties came thick and fast. New shapes were shown almost over night, and the rubber manufacturers found they had hardly prepared for one style when the demand came for another. The leading companies, as a rule, have introduced two or three new lasts each year the last few seasons, and the authority mentioned states that he believes the cost of adding one new style, including lasts, patterns, dies, the extra expense of printing labels, boxing and cataloging has been nearly or quite \$150,000 for his company. To-day it would cost more, for maple for last-blocks is scarce, the lumbermen being employed in felling timber for shipbuilding. Pattern makers report that die makers are now giving up their work for government jobs, and the cost of cutting-dies has increased heavily. The United States Rubber Co. made a material saving last year in abandoning the tip patterns on its women's rubbers, thus removing a number of styles from its catalogs, and found that dealers were just as well satisfied.

While some factory experts may not agree as to the above-mentioned cost of an additional style, there is no doubt a great saving to the rubber manufacturers in the elimination of the necessity of filling a demand for new shapes of leather shoes, and while this recent action of the War Industries Board relates only to spring footwear (which rubber men do not attempt to cover) the continuation of such restrictions to the fall and winter styles for 1919 will be likely to effect a saving which might aggregate one or more millions of dollars to the rubber footwear makers. The order that eight and one-half inches be the maximum height of women's shoes will require changes in next year's styles of high-cut tennis shoes. Some manufacturers are now making one or more styles of bals nine to nine and one-half inches high. But as these modifications are for the summer season of 1919, no change is necessary in this year's patterns, and it is a comparatively small matter to reduce the heights of tops an inch or less on future samples.

The restrictions regarding men's raincoats will make some difference with the manufacturer, but the producers have really had three or four months' notice of such action on the part of the Board, and have governed themselves accordingly. To be

sure, there is some question as to the exact ruling regarding the length of raincoats, the regular length of size 36 being 54 inches, while this new ruling fixes it at 48 inches. But raincoat makers carry "stouts" and "longs," and the probability is that men whose measurements are 36 inches around the chest and 6½ feet in height will be accommodated with raincoats which exceed the maximum length quoted. How this may be accomplished is left for each manufacturer to work out for himself, taking into consideration the special instructions given him before samples for the season were completed late last winter.

PROCEDURE GOVERNING TIRE EXPORTS TO NORWAY.

The War Trade Board announces that the following import associations in Christiania will accept on behalf of the actually interested Norwegian importer consignments of rubber tires: Royal Norwegian Automobile Club—automobile and motorcycle tires and tubes; Norwegian Cycle Tire Importers' Association—bicycle tires.

Applications for licenses to export commodities which are not to be consigned to a Norwegian import association will not be considered unless the prospective importer has given a guarantee certified by the Norwegian Finance Department and further certified by an American consul in Norway, who will furnish the importer a code word and an identification number. This code word and identification number should be forwarded by the importer to the prospective exporter in the United States and specified on Supplemental Information Sheet X-106 which should be attached to the application when applying for an export license.

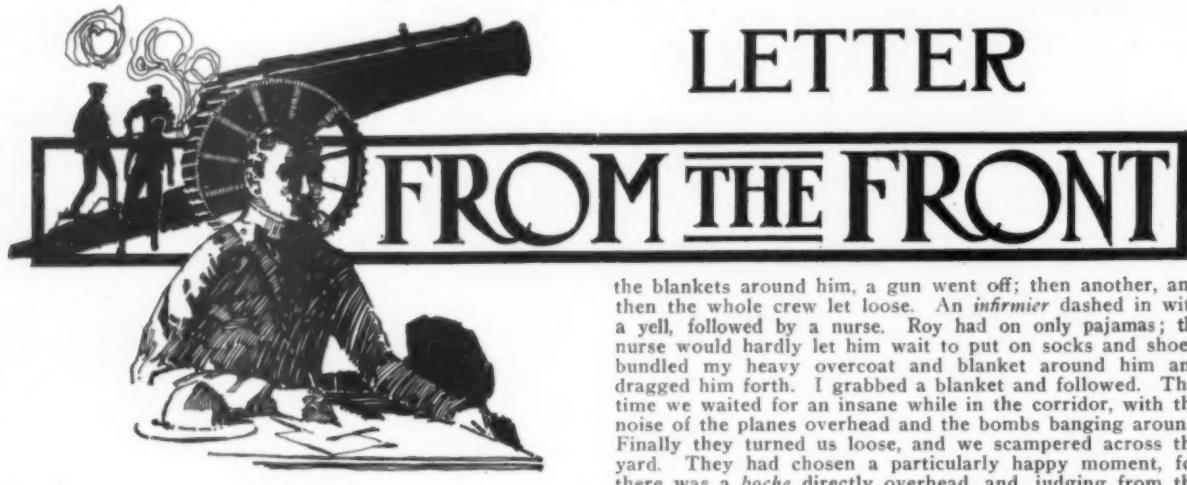
Temporary arrangements have been consummated, in accordance with which commodities consigned to Norwegian import associations may be exported on the basis of import certificates issued by such associations either subsequent or prior to May 10, 1918. Certificates issued prior to May 10, 1918, must be confirmed subsequent to May 10, 1918, by the import association which issued the same. Exporters in the United States should not apply for licenses to export to Norway on the basis of old import certificates until they are advised that such certificates have been confirmed.

NEW INVENTIONS NOT TO BENEFIT THE ENEMY.

WHILE the United States Patent Office still retains its authority to grant patents and to register labels and prints under the copyright law, even in cases where the applicants are enemies, it is announced that in the event of an invention being such as to be of aid to the enemy the Patent Office will probably withhold the grant of a patent thereon for the period of the war, under the provisions of the Trading with the Enemy Act.

By executive order dated April 16 the President revoked the authority previously vested in the Secretary of the Treasury to issue licenses to send, take, or transmit out of the United States any letter or other writing, book, map, plan, or other paper, picture or any telegram, cablegram, or wireless message, or other form of communication intended for or to be delivered, directly or indirectly, to an enemy or ally of enemy, in any way relating to letters patent, or registration of trade-mark, print, label, or copyright, or to any application therefor.

At the same time the Federal Trade Commission was prohibited from issuing licenses to any citizen of the United States or any corporation organized within the United States, to file or prosecute applications in the country of an enemy or ally of enemy for letters patent or for registration of trade-mark, print, label, or copyright, and to pay any fees or agents' fees in connection therewith; or to pay to any enemy or ally of enemy any tax, annuity, or fee in relation to patents, trademarks, prints, labels, and copyrights.



A wounded American graphically describes a night of hospital bombing by Hun raiders.

AT AN AMERICAN BASE HOSPITAL.

DEAREST FAMILY:

A fine moonlight night has nice sentimental connotations at home. Over here moonlight has other associations. It means air-raids.

* * *

We were peacefully reading after our usual manner about six o'clock in the evening when we heard the anti-aircraft guns begin to blaze away. At the same time the electric lights went out. We ran to the window, pulled back the heavy black curtains and craned our necks out. The guns were making a great racket all around; machine guns were barking, and we could plainly hear the buzz of the enemy planes, several of them, and very low. A couple of searchlights were struggling perfectly ineffectually against the white moon-glare—nothing to be seen but the occasional brief flash of shrapnel. We watched, or rather listened, for a minute; then the door burst open, and the *médecin chef* burst in with a flashlight. I guess he expected to find us under the beds; at any rate, his little English forsook him at the sight of us leaning out of the window and he could only gesticulate wildly and yell—"Allez, allez!"

As I supposed that there was an *abri* under the hospital somewhere, and as he was so excited that he wouldn't give us time to grab anything anyway, I dashed downstairs as I was—uniform and slippers. There was a crowd in the corridors pushing around in the dark; doctors, with flashlights, shoving through and yelling to each other; nurses herding their patients out of the wards and getting them blankets to wrap them in. (Luckily there are comparatively few *malades* here, and only about three, I think, who can't, on a pinch, walk.)

Well, after a lot of excitement and laughter and noisy confusion (a well-aimed bomb would have annihilated the lot of us), somebody cried "Go!" The door was opened and we trotted out across the yard, across the street, a block down another street, through a square, till we reached a sort of church or abbey or monastery. We three Americans found a nice big room on the ground floor with a lot of soldiers quartered in bunks, and a stove. I don't suppose it was bomb-proof, but it was comfortably warm, and we were much annoyed when our nurse discovered us and hauled us downstairs into a very large and unusually high-ceilinged crypt, damp as the tomb. It was Rembrandtesque—two or three candles rescuing little glimpses of pillars, vaulting, and blue uniforms from the somber gloom. Everybody seemed in high spirits—lots of laughter and loud talking, and an occasional snatch of song. Meanwhile the nurses made the sick comfortable on piles of straw—and outside, the guns and the bombs and the *mitrailleuses* raised a muffled roar. It quieted down after ten or fifteen minutes, but we waited for more than an hour. Then we all trooped back to the hospital and hot tea was brought around.

Roy, who still has a cheerful cough, went immediately to bed, and I picked up "Bleak House." Just as Roy was pulling

the blankets around him, a gun went off; then another, and then the whole crew let loose. An *infirmer* dashed in with a yell, followed by a nurse. Roy had on only pajamas; the nurse would hardly let him wait to put on socks and shoes, bundled my heavy overcoat and blanket around him and dragged him forth. I grabbed a blanket and followed. This time we waited for an insane while in the corridor, with the noise of the planes overhead and the bombs banging around. Finally they turned us loose, and we scampered across the yard. They had chosen a particularly happy moment, for there was a *boche* directly overhead, and, judging from the deafening roar of his motor, not more than two or three hundred feet high. I don't doubt that we made a fine mark, but he obligingly didn't turn loose his machine gun, for some unknown reason. We gained the *abri* all serene and prepared our souls to patience.

It was just as well, for there we stayed until two a. m.—six hours and a half. Occasionally the planes came back—there would be more guns and bombs, then perhaps an hour of quiet, after which the performance would be repeated. I think I counted six raids in all, but it may have been seven. For an hour or so it wasn't bad, though I thought with longing of the warm bed back in the hospital. I walked around to keep from getting sleepy, and talked to all the *infirmiers* about the coming great German offensive, and whether the Indians in America really wear feathers and scalp people. And it grew more and more boring and colder and colder. After what seemed hours of quiet, I would say to myself, "I'm sure they are not coming back again," and just then another gun would go off. An occasional rumor would go around that the hospital was demolished. (As a matter of fact, two or three bombs almost hit the big Red Cross in the yard, and a few panes were broken.) Roy and I tried to fix up a place to lie down in some straw, but it was uncomfortable and our joints got stiff and some *poilus* arranged their stretchers all over our feet and snored most horribly. And it got colder. Finally, when it appeared that we were going to spend the night, I got desperate and asked the nurse whether some one couldn't go back to the hospital and get a lot of blankets and cigarettes and other necessities. "Non, non, c'est défendu"—just what I expected her to say. So I sneaked up the stairs when no one was looking and walked back to the hospital. There wasn't an untoward sound, and I was pleased to see that the moon was getting low. I went up to our room, got cigarettes, chocolate and all the blankets I could carry, and returned unmolested to the *abri*. My walk warmed me up, and the last half hour or so before they sent us home wasn't so bad.

* * * Yours as ever,

RIP.

NATIONAL RESEARCH COUNCIL TO BE PERMANENT.

By executive order the National Research Council, organized in 1916 at the request of President Wilson by the National Academy of Sciences, is to become a permanent body to co-ordinate the sciences. The work already accomplished by the council in organizing research and in securing cooperation of military and civilian agencies in the solution of military problems has demonstrated its capacity for larger service. Effective prosecution of the work requires the cordial collaboration of the scientific and technical branches of the Government, both military and civil, and to that end government representatives, upon the nomination of the National Academy of Sciences, will be designated by the President as members of the council as heretofore. Heads of the departments concerned will also continue to cooperate in every way that may be required.

The Rubber Association of America.

ADVANCE SHIPMENT OF RUBBER FOR GOVERNMENT CONTRACTS PERMITTED.

THE rubber industry was advised on May 29 that manufacturers holding government contracts for June and July delivery who find it necessary to have licenses or allocation certificates for the importation of crude rubber in advance of their determining the exact quantities they will consume on government contracts during these two months, can now have applications promptly considered by the War Trade Board to the extent of 75 per cent of their probable consumption. Application should be made upon an approved form, which will be mailed by the association upon request.

GUTTA JELUTONG, GUTTA SIAK, GUTTA PERCHA AND BALATA.

From and after May 28 applications for license for the importation of gutta jelutong and gutta siak from overseas will be refused, and all licenses now outstanding for the importation of gutta jelutong, gutta siak, gutta percha and balata from overseas be revoked. New licenses may be granted, however, covering the importation of gutta jelutong, gutta siak, gutta percha and balata from overseas provided that such commodities are covered by a through bill of lading bearing date prior to June 1, 1918, and provided also that the applicants for such licenses shall deliver a valid and binding option to the United States Government covering their importations. Copies of the required option form may be obtained from the association upon request and the prices to be inserted are as follows:

	Per Pound.
GUTTA JELUTONG, PONTIANAK:	
Palembang	\$.16
Banjermassin .....	.15
Sarawak .....	.14
GUTTA JELUTONG PRESSED:	
Having approximately 40 per cent. shrinkage loss .....	.25
GUTTA SIAK:	
In bond .....	.28
BALATA:	
Prime Surinam amber sheet .....	.97
Fair average sheet .....	.95
Venezuela block .....	.71
Colombian block .....	.61
Panama block .....	.59
Other grades of balata at their relative value.	
GUTTA PERCHA:	
Red Macassar	3.00
Other grades at their relative value.	

All of the above values are on the basis of c. i. f. New York.

The War Trade Board has further determined that the total amount of gutta percha to be imported from overseas into the United States during the year commencing June 1, 1918, and ending May 31, 1919, shall be limited to 650 long tons and that such dates shall be held to apply to the dates of the bill of lading covering the shipment and not to the time of entry of gutta percha in this country, and has made a similar determination limiting the amount of balata to 1,400 long tons under the same conditions.

PRICES FIXED ON MANICOBAS AND OTHER BRAZILIAN GRADES.

On May 29 the rubber trade was notified that the following supplemental list of valuations has been approved by the War Trade Board on the grades of rubber mentioned below:

MANICOBAS:	Per Pound.
Basis of 30 per cent. loss in washing and drying	\$.36 1/2
Lower qualities to be priced in accordance so that they shall not cost the manufacturer over 52 cents per pound dry weight.	
Mollendo fine .....	.60
Tapajos .....	.61
Xingu fine .....	.63
Peruvian weak fine .....	.55
Manaus weak fine .....	.45

The Government shall have an option at the aforesaid prices to the same extent as already given on the grades, the maximum price of which has previously been established.

PLANTATION RUBBER PRICE CHANGES.

Notice was sent to the trade May 29 that prices for the following grades of plantation rubber as given in the list of May 14 have been changed as follows:

	Per Pound.
Standard quality smooth smoked sheets	\$.61
Standard quality unsmoked sheets .....	.60

STANDARD FORM OF AFFIDAVIT FOR INDIRECT GOVERNMENT CONTRACTS.

A standard form of affidavit to be used in making applications for replacement of rubber used in the manufacture of goods for indirect government orders was sent to the trade on May 31. When properly filled out this form gives a history of the rubber from the time it leaves the manufacturer's hands until it is finally delivered to the government on a government contract, inasmuch as it shows the various hands through which it has passed and the final seller to the government who furnishes the government contract number and makes the affidavit. When properly filled out and attached to the regular form of application for replacement, it will entitle the manufacturer to receive the amount of rubber used in filling the order. A supply of these forms can be obtained from the association upon request.

TONNAGE OF IMPORTS FROM CENTRAL AND SOUTH AMERICA BASED ON SHRINKAGE.

The rubber industry was notified, on June 3, of the decision of the War Trade Board that the tonnage of crude rubber imported in the United States from Central and South American countries shall be calculated not upon the actual weight thereof at the port of shipment but upon the following schedule deducting the shrinkage in accordance with the percentage allowed thereon for each grade, as follows:

PARAS:	Per Cent. of Shrinkage Allowance.
Up River fine	25
Islands fine	33 1/3
Up River coarse	30
Islands coarse	30
Cameta coarse	30
Upper caucho ball	25
Lower caucho ball	30
Central American rubbers	30

The following approximate formula will in all probabilities be followed by the Bureau of Imports in granting licenses for shipments of wild rubber from Central and South America:

PARAS:	Amount of Application.	Amount Charged Allocation.	Issue to Ship.
Up River fine	tons 100	100	132
Islands fine	" 100	100	150
Up River coarse	" 100	100	140
Islands coarse	" 100	100	140
Cameta coarse	" 100	100	140
Upper caucho ball	" 100	100	132
Lower caucho ball	" 100	100	143
Central American rubbers	" 100	100	140

By this ruling these grades of South and Central American rubbers will be placed on as favorable a basis as dry plantation qualities.

MAY RUBBER REPLACEMENTS ON GOVERNMENT CONTRACTS.

The following letter was sent to the trade on June 5:

It having developed that during the month of May ultimo, manufacturers in executing government contracts requiring speedy delivery, etc., had tendered rubber goods which were manufactured prior to May 6, the point was raised as to whether or not the rubber content of such goods was not subject to replacement in full.

The matter was laid before the War Trade Board who has ruled in the affirmative and manufacturers may therefore include in their application for replacement of crude rubber used during the month of May, 1918, in government contracts, the rubber

content of such merchandise made prior to May 6 that was delivered after May 6 on any of their government contracts.

Caution should be used not to include the rubber content of any merchandise delivered on government orders prior to May 6.

MANUFACTURERS URGED TO EXPEDITE ALLOCATION CERTIFICATES.

The Committee on Rubber and Kindred Products has again called the attention of the manufacturers to the importance of requesting the War Trade Board to issue certificates covering their complete allocation for the current quarter, and then promptly filing them with importers with whom they have contracts or make purchases.

It is obviously to the interest of the trade that the total allocations to the industry be taken up, for the Committee on Rubber and Kindred Products assumes that manufacturers will lose any of the quarter's allocations that are not licensed for importation during that period.

In view of the time required by the importer to place his orders or instructions overseas after receipt of the licenses, it is very desirable that no time be lost in procuring and placing them with importers.

QUESTIONNAIRES COVERING COTTON FABRIC AND YARN.

In connection with the possible allocation of fabrics, the War Industries Board has requested that the War Service Committee of the Rubber Industry of the U. S. A. obtain certain statistical information with respect to the consumption of cotton fabrics and yarn during the year 1917. For this purpose three separate questionnaires covering cotton woven fabrics, cotton knit fabrics and cotton yarn and cord were sent to the rubber manufacturers on June 10.

PRICES FIXED ON OTHER BRAZILIAN SORTS.

On June 13, the following option prices were approved by the War Trade Board:

	Per Pound c.i.f. New York.
Knapsack Madeira fine Para.....	\$0.73
Madeira fine Para .....	.69

NUMBER OF EMPLOYEES AND VALUE OF PRODUCTION FOR 1917.

Answers have now been received from all of the principal rubber manufacturing companies to War Service Committee Questionnaire No. 3, which was sent out to the trade last March, asking all companies for the number of employees at their peak during the year 1917, and the aggregate value of their production during the same year. These replies have been tabulated, with the following result:

Number of companies replying.....	452
Total number of employees at their peak during 1917.....	207,714
Total value of production during 1917.....	\$805,816,248

SHRINKAGE ALLOWANCE LIST AMPLIFIED.

The War Trade Board on June 22 adopted the following schedule of shrinkage allowances on the various grades of Brazilian rubber, amplifying the list of June 3:

Grade.		Per Cent of Shrinkage Allowance.
FINE PARA.		
Upriver		25
Madeira		25
Manaos weak		25
Knapsack		25
Peruvian weak		25
Mollendo		25
Mattogrosso		25
Islands		33½
Tapajos		25
Upper Xingu		25
Peruvian		25
Cut Angostura		25
MEDIUM PARA.		
Upriver		25
Peruvian		25
Cut Angostura		25
Coarse-Medium (mixed Para)		25
COARSE PARA.		
Upriver		30
Mattogrosso		30
Islands		30
Cametá		30
Peruvian		30
Mollendo		30

	Per Cent of Shrinkage Allowance.
Rio Negro coarse	30
Rio Negro strings	35
Nugget coarse	30
Angostura coarse	30
Tapajos coarse	30
Xingu coarse	30
Ceará coarse, negroheads	30

MISCELLANEOUS.

Manicobá 1.....	30
Lower Amazon weak.....	25
Ceará Scrap 1.....	30
Pernambuco sheet.....	35
Mangabeira sheet.....	35
Upper caucho ball.....	25
Caucho tails.....	25
Lower Amazon ball.....	25
Upper caucho slab.....	30
Upper Xingu ball.....	25

There still appears to be some confusion on the part of some manufacturers as to the basis on which these shrinkages are calculated. In order to make the matter quite clear, the Committee on Rubber and Kindred Products advises that the War Trade Board declares the shrinkage allowance upon the shipping weight of the rubber from Brazil and not upon the landed weight of same in New York. Therefore the usual shrinkage in transit should be provided for in the shape of additional allocations where the landed weight called for is desired. Example on Fine Para:—a manufacturer furnishing allocation certificate for 7,500 pounds would be entitled to have 10,000 pounds shipped from Brazil; if he desired 10,000 pounds landed to his importer to take care of the transit shrinkage.

IMPORT LICENSES FOR MANUFACTURED RUBBER GOODS REVOKED.

All outstanding licenses for the importation of manufactured rubber goods have been revoked by the War Trade Board, as to ocean shipment after June 25, 1918. No licenses for the importation of manufactured rubber goods will be issued after that date.

This ruling applies to all manufactured goods wherein rubber is the principal constituent. Articles containing incidental small quantities of rubber, to an extent of not more than five per cent of the total weight of the article, may be exempted from the effect of this restriction.

THE RED CROSS INSTITUTE FOR CRIPPLED AND DISABLED MEN.

The Rubber Association of America, Inc., commends to the rubber industry as worthy of serious attention the work of the Red Cross Institute for Crippled and Disabled Men, which has its offices at 311 Fourth avenue, New York City. A circular entitled, "The Duty of the Employer in the Reconstruction of the Crippled Soldier," is being distributed, which deals with the several different aspects of the problem of helping the returned disabled soldier to take a self-respecting, self-supporting place in the community and the industrial world through proper training and careful assignment to suitable occupation. The employment bureau states that its purpose is to find employment for crippled soldiers and other partially disabled men, to find permanent work quickly, and work in which the man can be efficient and self-supporting. Employers are asked to indicate their willingness to cooperate with the movement by filling out and mailing to the employment bureau a simple card stating that fact.

CREDIT TO THE SHIPBUILDERS.

A remarkable record was achieved recently at the Morse Dry Dock and Repair Co.'s plant in South Brooklyn, New York. Bertram Bieher, riveter, and his holder-on Eddie Hesse, with four heater boys, drove 1,480 regulation-size three-quarter-inch button-head rivets in four hours and ten minutes. They worked under the handicap of being forced to travel 34 feet for every 18 rivets driven, on girders on which the rivets were 12 inches apart. The air hose used in this remarkable feat was that known as Peerless No. 4,810, made by the United States Rubber Co.

Factice or Rubber Substitute.

By André Dubosc.

In anticipation of a crude rubber shortage THE INDIA RUBBER WORLD secured the following from the pen of a distinguished French chemist, as being not only timely, but of great practical value to the whole trade.

VEGETABLE or animal oils occur as non-saturated bodies having free valences. It is quite evident that if these are put in contact with other chemical bodies, capable of saturating them while giving reactions of addition, new bodies will be obtained of which the physical and chemical properties will differ absolutely from the oleaginous substances from which they have been derived.

On the other hand, still greater modifications can be produced. Fatty ethers or oils are saponifiable, and reactions of substitution can take place.

The action of metalloids like oxygen and sulphur, of certain chlorides like chloride of sulphur, and of acids like nitric acid, on vegetable or animal oils under varying conditions of temperature determines modifications like those about to be described. Because of their physical resemblance to rubber, the products of these different reactions are called rubber substitutes or factices.

The bodies most frequently employed in preparing commercial factices with different kinds of oils are sulphur and chloride of sulphur.

Anderson, in 1847, first realized the industrial possibilities of these oil-sulphur compounds. Nicklès and Rochelder afterward noted that by mixing them at ordinary temperature with a certain quantity of chloride of sulphur, a compound analogous to rubber was produced. Their rather summary study was completed by the work of Parkes, who discovered the vulcanization of rubber with chloride of sulphur and considered the two actions identical.

Roussin, at length, in a series of extremely interesting communications made at the Academy of Sciences, largely established the technique of the new manufacture. Gaumont applied the new compounds to the manufacture of printing rolls, replacing gelatine and molasses. Perra, Bruce and Warren studied the manufacture of brown factices, while Queen was the first to think of reducing the violence of the reaction between the oils and the chloride of sulphur with such diluents as carbon bisulphide or benzine.

Until 1870, when the war made the use of factices common, sulphureted oils were prepared in an empiric fashion and no thought was given to the establishment of the theory of reactions which occur between the metalloid and the oleaginous products. Up to the present time this theory has not been completely established, whatever the various hypotheses put forward may be.

Atschul was the first to attempt explanation of what takes place in the action of sulphur or chloride of sulphur on oils. According to this chemist, two compounds are formed, depending on the temperature of reaction. When 16 per cent of sulphur is mixed in contact with an oil, 15 per cent of the metalloid is dissolved and absorbed by the oil.

A drop of the oil thus treated and poured on a glass plate becomes opalescent on cooling; examination with the microscope shows a crystallization of sulphur which is formed in time. There is, therefore, solution and absorption, but no chemical combination, although there is formation of a little hydrosulphuric acid. This phase is a simple physico-chemical phenomenon.

When the temperature is raised above 150 degrees the formation of hydrosulphuric acid increases with the rise in temperature. The oil becomes more and more viscous and eventually solid. The sulphur is then chemically fixed and the product obtained ceases to be soluble in the ordinary solvents of oil.

The percentage of sulphur thus fixed varies according to whether crude oils or oils oxidized by blowing hot air through

them have been used. This is easily explained: the oxygen of the atmosphere, in fixing itself partly on the free valences of fatty acids, has to some extent saturated them; consequently, they cannot by addition fix more than a very small quantity of sulphur.

If large quantities of sulphur are fixed on oxidized oils, their modification is greater, producing substitution products with the formation of hydrosulphuric acid.

On the other hand, it has been found that the more easily oxidizable an oil is, the more readily it fixes sulphur, producing a saponifiable oleo-sulphuret. It is also claimed that up to 150 degrees C. only solutions and absorption of sulphur, without chemical reaction, take place in the preparation of brown factices; above this temperature an addition product is first formed; and if the temperature continues to rise a product of substitution appears.

In the last instance the percentage of sulphur in the final product may be considerable and amount to 25 per cent. The reaction, viewed as a whole, then presents three phases, and it is probable that the commercial product, if made at a high temperature, would correspond to a mixture in equilibrium of the product of absorption—oleo-sulphurets of addition and substitution.

The products derived from sulphur are brown, those from chloride of sulphur are white or slightly yellow.

In principle, all vegetable or animal oils may be used; nevertheless, experience has proved that certain oils are preferable and their treatment easier. Drying oils, like those from linseed, hemp, poppy, walnut, camelina, sunflower, black mustard, rapeseed or beechnut, are preferable. However, non-drying oils like castor oil may give excellent factices.

Finally, since the war, fish oils have been used. These produce good results in the preparation of brown factices, but in spite of great precautions they almost always furnish white factices strongly tinged with yellow.

The general procedure of manufacture at present is as follows:

The oils are blown with hot air, oxygen thus combining with the fatty acids not saturated with glycerine. The more oxygen the oil absorbs the thicker it becomes. For factices the operation should cease when a density of 0.97 has been attained. At a higher density the oil would be too thick and would sulphurize badly.

For several years it has been the custom to add to factices a certain number of foreign bodies capable of entering rubber mixtures without harm, and which, because of their low density, make the product of lighter specific gravity.

The ingredients used in both factices are: paraffin, vaseline, vaseline oil, and clear mineral oils. For brown factices the following are also used: resin oils, asphalt—especially Emarex of Utah, dry or moist pitch, tar, oil pitches like cotton tar or maize tar. With white factices, the following are often used: light magnesia to neutralize the traces of hydrochloric acid that may remain, light calcium carbonate, magnesium carbonate, talc.

Factices are insoluble in the usual rubber solvents, like benzine, carbon bisulphide, carbon tetrachloride, turpentine or tetrachlorethane and also in alcohol or in cold caustic soda. They are slightly soluble in warm chloroform and completely soluble in boiling, heavy naphtha, in alcoholic soda and in acid chlorides.

Under high pressure, three to four atmospheres, they are saponifiable by warm alkalies, which render these ingredients useless in the manufacture of certain packings. White substitutes cannot stand the light, especially ultra-violet rays, which

transforms them, after some exposure, into oily, sticky masses.

White and brown factices are further classified, according to their physical characteristics: dry floating, dry non-floating, fatty floating, and fatty non-floating.

MANUFACTURE OF WHITE FACTICES.

Nicklès and Rochelder were the first to observe the action of chloride of sulphur on oils and to note the formation of a rubber-like substance. Mixed with any vegetable oil whatsoever, they stated, chloride of sulphur immediately converts the fatty body into a solid substance, often possessing a certain hardness.

To obtain a solid factice, the following percentages of chloride of sulphur should be used on crude, unblown oils: linseed oil, 30 per cent; poppyseed oil, 35 per cent; rapeseed oil, 25 per cent; cottonseed oil, 45 per cent; olive oil, 25 per cent; castor oil, 20 per cent.

If these proportions are reduced by only 5 per cent, solidification does not take place.

Now, if the factices obtained under these conditions are analyzed, it will be found that the quantities of sulphur chloride fixed on the oil do not in the least correspond to the quantities used. Thus, linseed oil factice contains 18.18 per cent sulphur chloride in combination; cottonseed oil factice, 11.59 per cent; castor oil factice, 11.55 per cent, and olive oil factice, 12.75 per cent.

A portion of the elements of the chloride of sulphur must therefore have entered into some other combination. For that matter, experience proves this, for the action of chloride of sulphur on oils is always accompanied by the liberation of hydrochloric acid, chlorine, and sulphurous acid gases which make this reaction very disagreeable and which, from a technical point of view, require control.

The formation of hydrochloric acid, sulphurous acid, and the freeing of chlorine gas during the reaction shows that the vulcanizing reagent is decomposed in its action on the oil and only a part of the elements combines with the fatty matter.

The equations of combination have neither been isolated nor studied; they must evidently vary for each kind of oil and at each temperature. In this connection, there are only empiric data by which the manufacture is regulated, but these data are not absolute. All that can be said is that two oils coming from the same seed—linseed, cottonseed, castor, etc., having like constants, index of iodine, of acetyl, of saponification, treated at the same temperature with the same proportion of chloride of sulphur, give products perceptibly identical.

Temperature plays a very important rôle and may have very disagreeable surprises in store. A perfectly white factice can be obtained with castor oil if the temperature is not allowed to go beyond 45 to 50 degrees C. If, however, the temperature is permitted to rise to 70 to 80 degrees C., the result is a pale green factice.

Under the same conditions a fish oil would yield a factice either of light-orange tint or absolutely brown.

The question of intimate mingling of the materials entering into the reaction is also important; if the chloride of sulphur is not intimately mixed with the mass from the very outset, the reaction will be extremely violent and very rapid; consequently there will be overheated parts, the color of which will be quite different from that of the mass. In certain cases, actual local carbonization may take place.

Two methods are employed in the commercial preparation of factices: (1) the pan process; (2) the closed vat process.

In a stoneware pan or vessel with a capacity of 25 to 30 liters are poured 10 to 12 liters of oil—crude or oxidized—for which, by a preliminary test, the quantity of chloride of sulphur needed to convert the oil into factice has been determined. This quantity is measured in advance and, if preferred, mixed with a certain portion of a diluent.

A funnel with long stem is plunged into the oil and the chloride of sulphur is very slowly poured into it so as to enter the oil in a fine thread-like stream; the mass is constantly stirred with a paddle so as to produce thoroughly intimate mixing.

By degrees the viscosity of the oil increases and the temperature gradually rises. If the temperature appears to be mounting too rapidly (more than 15 degrees C. per minute), the introduction of chloride of sulphur is temporarily stopped, to be resumed when the increase in temperature has somewhat subsided.

The introduction of chloride of sulphur must be regulated in such manner that when the entire quantity needed has been poured into the oil, the mass does not exceed 60 to 70 degrees C. If this should happen, the vessel in which the reaction is taking place should be cooled with running water. The reaction evolves much heat and the oil becomes thicker and thicker. As the stirring is continued, hydrochloric acid, sulphurous acid, and chlorine are thrown off; the mass froths abundantly and then suddenly becomes solid after having formed a kind of thick glue that adheres to the walls of the container.

Stirring is continued with the paddle. Meanwhile, the mass which has formed is broken into small fragments from which separate the vapors of acid and chlorine, as well as of chloride of sulphur.

This stirring is kept up until the mass begins to cool, when it is transferred to a large mortar of porcelain or marble and vigorously triturated with the pestle. The factice is then placed on sieves and is allowed to remain exposed to the air for some hours. By this means the last traces of free acids that it might contain disappear. Frequent dusting with magnesia—MgO—reacts with hydrochloric acid and hastens its elimination.

The next step is to dry the factice either on quicklime or in a well-ventilated oven, the temperature of which is maintained between 35 and 45 degrees C.

The pan process gives very regular factices and permits the progress of the reaction to be easily followed by modifying at will the entrance of chloride of sulphur and also by avoiding any sudden rise in temperature, which tends to discolor or darken the product.

On the other hand, the method is very troublesome because the workmen run the risk of inhaling the acid vapors, formed from the chloride of sulphur, sulphurous and hydrochloric acids, which are extremely disagreeable to breathe, for they attack the mucous membrane, bringing on coughing and causing the eyes to water. To prevent the too sudden rise of temperature, one may dilute either the oil or chloride of sulphur singly or in combination.

Certain diluents, like benzine and carbon bisulphide, are volatilizable at the temperature of the reaction and in the pan process are completely lost. Other diluents like petrol, toluol, xylol, paraffin oil, vaseline, coconut oil, white wax and paraffin, distil only at temperatures higher than that of the reaction; therefore, they remain in the product as organic fillers.

Frequently a mixture of two oils, one vulcanizing very rapidly and the other more slowly, is substituted for a pure oil. As a sample, the following formula is practical:

Castor oil,	150 parts}
Colza oil,	100 parts}
Chloride of sulphur	55 parts}
Light benzine	10 parts}

This gives a substitute that is white, very dry, but only slightly spongy.

If a fatty factice is desired, the quantity of chloride of sulphur is reduced by 15 to 18 per cent. When a very spongy product is the object, 10 to 15 per cent of calcium carbonate, carbonate of magnesia or of sodium, are added to the mixture of oils before the chloride of sulphur is introduced.

(To be continued.)

What the Rubber Chemists Are Doing.

TESTING OF RUBBER.¹

THE product (*ab*) of the breaking load in kilograms per square centimeter (*a*) and the elongation at break, in percentage (*b*) has been valued as a useful figure for judging the mechanical properties of rubber. Since it is obvious that with an increasing coefficient of vulcanization the elongation at break slowly decreases while the tensile strength attains its maximum, the product of these figures teaches nothing more than the tensile strength alone, and its use should be rejected. The Institute attaches very little value to maximum properties. If the tensile strength or the product *ab* attains its maximum value with a vulcanization coefficient of 5.0, the rubber is strongly overvulcanized, and consequently this maximum is of not the slightest value. In fact, Gottlob has determined that the most favorable time of vulcanization is when the tensile strength is not developed to a maximum, since with maximum tensile strength the rubber is strongly overvulcanized.

The work done in elongating the test sample to the instant of rupture is indicated by the area of the figure enclosed between the curve up to the breaking point, the line through this point parallel with the stress axis, and the elongation axis. Since the work done attains a maximum with the same value of the vulcanization coefficient producing the maximum tensile strength, this area teaches nothing more than the value of the tensile strength itself.

COMPARISON OF BRAZILIAN HARD FINE PARA AND PLANTATION RUBBER.

There is a great variation in the velocity of vulcanization of plantation rubbers. Thus the slowest vulcanizing First latex rubbers have to be treated three times as long as the fastest varieties to obtain the same vulcanization coefficients. Also there is a distinct difference in the average velocity between crêpes and sheets, to the advantage of the latter.

VARIABILITY IN THE VELOCITY OF VULCANIZATION FOR FIRST LATEX HEVEA RUBBER.

VULCANIZATION COEFFICIENT.	NUMBER OF FIRST LATEX CREPES.	NUMBER OF FIRST LATEX SHEETS.
1.45—1.95	7	4
1.95—2.45	39	5
2.45—2.95	52	12.5
2.95—3.45	61	9.5
3.45—3.95	46	20
3.95—4.45	24.5	26
4.45—4.95	5.5	16
4.95—5.45	1	9
5.45—5.95	0	3
Total samples	236.0	105.0

UNIFORMITY OF THE VELOCITY OF VULCANIZATION AND MECHANICAL PROPERTIES OF HARD FINE PARA RUBBERS (WASHED).

FINE PARAS.	VULCANIZATION COEFFICIENT.	STRESS KGS. PER SQ. CM. FOR 850% ELONGATION.	BREAKING LOAD, KGS. PER SQ. CM.	ELONGATION, PER CENT.
Madeira	2.86	72	94	905
Bolivian	3.29	65	113	946
Purus	3.81	79.5	122	922
Jurua	3.23	76	119	934
Cavianna	3.39	80	103	902
Anapis	2.87	59	86	923
Dowes Xingu	3.15	52.5	89	946
Islands	2.67	74	87	884
Fine hard	2.69	..	94	908

¹ Continuation of abstract begun in THE INDIA RUBBER WORLD, June 1, 1918, page 536, of report by Dr. A. van Rossem on methods of testing crude rubber, from Communications of the Netherland Government Institute for advising the rubber trade and the rubber industry.—Part V.

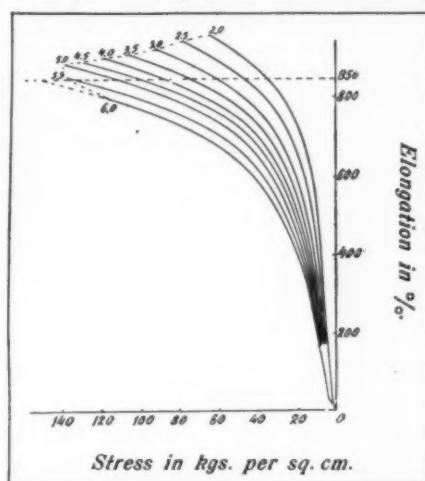
The approximate values of stress necessary for an elongation of 850 per cent may be found for the corresponding vulcanization coefficients given in the upper table for First latex rubbers. Comparison of these values with the corresponding ones for the Fine Para rubbers in the lower table shows that the values for hard Fine Para are fairly regular and decidedly first-class. So far as the incomplete data allows, it is assumed that the superiority of Brazilian Para is due, apart from greater uniformity, to the fact that with the same vulcanization coefficient this rubber requires a greater load for a definite elongation and break, than First latex rubber, which means that it is stiffer and stronger. This superiority is chiefly important in the manufacture of stiff rubber articles where much nerve and great strength are required.

It should be noted, however, that among the plantation rubbers greater deviations from the average occur in the same direction, i.e., stiffer and stronger vulcanizing samples, than in hard Para. But on the average the plantation product lags behind and valuation is necessary to detect the better variety.

It is interesting that these different plantation rubbers, developed along special lines, are distinguished from First latex rubbers, as ordinarily prepared, by a greater velocity of vulcanization or by a particular course of the stress-strain diagram, or by both. Thus Kerbosch, Schadt and Byrne rubbers have a very high velocity of vulcanization but their diagram does not fit in with the normal scheme, yielding a more pliable product than might be expected from their vulcanization coefficients. Samples obtained by the electrical method and those which have been treated during coagulation with soda possess a greater velocity of vulcanization and abnormally great strength for an elongation of 850 per cent, and corresponding abnormally great breaking load. After vulcanization, therefore, these rubbers produce an abnormally stiff and strong product.

PERMANENT SET.

Permanent set is measured in the following way: with the Schopper punch a ring is punched from a vulcanized test sheet. This ring is slipped over a glass plate, the edges and corners of which are ground smooth and tapering in order to permit the ring to be easily adjusted. The dimension of the plate is such that the length of the expanded ring amounts to precisely 400 per cent. The ring remains stretched for 24 hours, being then removed and left for six hours. The elongation is then measured. As to the valuation of rubber, the measurement of its permanent set does not add to the information obtained from the results of other mechanical test methods, and is not to be preferred to the tensile tests with the Schopper machine.



RESILIENCY OR REBOUNDING TEST.

The instrument described by P. Breuil, known as an elastometer, is arranged to cause a steel ball to fall from a constant height of 25 cm. onto a rubber plate, and the height of the ball rebound is read off. The resiliency or rebound of the rubber is thus found. Van Iterson has devised a shock test apparatus which registers the rebound. It consists of a pendulum with a drop of 205 mm., which strikes in its lowest position against a vertically placed rubber sample from which it rebounds, and then charts a curve on a vertical piece of paper, rotating with constant velocity in a horizontal direction. The top of the diagram indicates the highest position of the rebound of the pendulum, which offers a measure for the resiliency of the sample. For practical purposes the instrument teaches little more than the simpler apparatus of Breuil, although for purely scientific tests it is preferred. From numerous data collected at the Institute it can be deduced that with plantation-sulphur mixtures the resiliency diminishes, on an average, with the increase of vulcanization coefficient. Such decrease does not always take place equally fast. Whereas with vulcanization coefficients up to about 4.5 a slow diminishing can be noticed, above this figure the diminishing becomes more considerable. As rubber with such high vulcanization coefficients may practically be considered as overvulcanized, measuring the resiliency affords a rapid means for determining overvulcanization. In the opinion of the Institute the rebounding test can be omitted for the valuation of raw rubber. Undoubtedly the apparatus may be of importance to investigate how the resiliency is acted upon by fillers. The rebound is in a high degree dependent on temperature. This phenomenon is so striking that when two tests are made quickly one after the other, the second reading will nearly always be higher than the first, because the ball falling exactly on the same place has after the first impact transmitted its work into heat, increasing the resiliency of the rubber locally.

VULCANIZATION TESTS.

Investigation at the Imperial Institute of samples of plantation rubber from Ceylon, prepared in connection with the Rubber Research Scheme, are reported by Mr. L. E. Campbell, in Bulletin No. 35, Department of Agriculture, Ceylon. This is the sixth interim report, and deals with experiments with 21 specimens where wood creosote or formalin was added to the latex as a preservative, and specimens of rubber dried in the usual way in the form of wet block or roll were prepared for comparison.

All the specimens included, with one exception, gave very good results in the mechanical tests. The figures for tensile strength range from 2,300 to 2,500 pounds per square inch, with an average of 2,445 pounds for 20 specimens. This is a higher average value than that given by the samples in any of the previous reports.

The results of the investigation of this series of rubbers is summed up in the report as follows:

CONCLUSIONS.

The results recorded confirm the previous conclusion that rubber prepared in such a way as to remain moist for a considerable period invariably cures more rapidly than rubber prepared from the same latex and dried thoroughly soon after coagulation. The rubbers retaining most moisture appear to cure more quickly than those containing less water. This effect is produced even when preservatives, such as creosote and formalin, are added to the latex before coagulation.

Rubber allowed to remain in a moist condition almost invariably gives excellent results in the mechanical tests. Such rubber appears to be quite equal in physical properties to rubber from the same latex which is dried thoroughly soon after coagulation, and has a much quicker rate of cure.

Wet, quick-curing rubbers contain larger amounts of resin and smaller amounts of protein than the dry rubber prepared from the same latex. Investigation of the possible relationship between the percentages of resin and protein and the time of vulcanization awaits receipt of additional samples of wet rubber prepared for the purpose.

Previously recorded results have been confirmed, namely, that considerable variation in time of cure may occur in plantation rubber from the same trees prepared at different times by identical methods.

VULCANIZATION OF RUBBER BY SELENIUM.

The following is quoted from a paper published in "The Journal of Industrial and Engineering Chemistry," by Charles R. Boggs, chemist of the Simplex Wire and Cable Co.

The author's first experiments were undertaken in 1913 to determine if rubber vulcanized with selenium would give a product of especial adaptability to some of the many uses of rubber.

Selenium is a metal, in the same group of the periodic table as oxygen, sulphur and tellurium, is much more metallic than sulphur and has a higher melting point, 217 degrees C. Its atomic weight is 79.2. It occurs in two crystalline and one amorphous form and possesses a complex molecule when cold, Se, being very similar to sulphur. A short table of its properties follows:

	Crystall.	Specific Gravity.	Solubility. ¹	Melting Point C.
Black or gray crystalline	Octahedral	Insoluble in		
	Hexagonal	4.80	CS ₂	217 degrees
Red crystalline.....	Monoclinic	4.46-4.51	Soluble in CS ₂	175 degrees
Red amorphous.....	.....	4.26-4.28	1 soluble (and 1 insoluble)	Softens at 102 degrees in CS ₂

All modifications go over to the black crystalline form when heated at 100 to 150 degrees C. The black crystalline powder can be obtained on the market in small quantities, but should be procurable in fair amounts if there were a commercial demand for it. Black selenium has the further peculiar property of being an electric conductor under the influence of light, although the other forms are insulators. It might, therefore, cause rubber, which has been vulcanized with it, to show some slightly unusual electrical characteristics.

The author's first attempts were with selenium in the form of black powder used in a standard 30 per cent Para compound in the equivalent proportion that sulphur would be used. By heating at about 150 degrees C. for a couple of hours a partial vulcanization resulted, although the temperature was well below the melting point of selenium. Increase of time did not improve the product. These samples have aged well for four years.

Doubling the amount of selenium and employing an organic accelerator, used then with sulphur, did not improve the product, but did make samples go to pieces with age. A peculiar point about this compound was that when removed from the press hot its volume expanded 25 per cent, but became normal again when cold. This high coefficient of expansion indicated lack of vulcanization.

By trial, accelerators have now been found which satisfactorily vulcanize rubber with selenium when heated at the ordinary vulcanizing temperature of 275 degrees F. for only about twice the time required with sulphur. The product gives the normal tensile strength (1,100 to 1,200 pounds) and elongation (two to ten inches or twelve inches) of the same compound with sulphur. It is somewhat soft, but does not show deterioration under the short life test of four days' heating in air at 70 degrees C. Electric tests on wire insulated with this compound show somewhat low insulation resistance and dielectric strength.

The present product has not disclosed any unusual electrical properties, but the indications are that its deterioration with age is much less than with sulphur compounds. As the deterioration of rubber goods is the one disadvantage of rubber, especially in those

lines where permanency is desired, it may be that the use of selenium will partially remove this disadvantage.

RUTILE.

The mineral rutile is the dioxide of the metal titanium. In powdered form it is used as a coloring material, sometimes called titanium pigment. Its color is dull ochre or tan and the average specific gravity is 4.00. Its chief industrial application is as a vitrifiable color in the manufacture of enamel and glass-ware. It is also used in the silk industry and in the preparation of tan-colored leather. Rutile will be found chemically available as a rubber pigment because of its permanent character. It is not affected by the heat of vulcanization, and is stable toward the usual compounding ingredients. In England titanium oxide is reported to be used as an accelerator. Its effect is also said to resemble that of zinc oxide, increasing tensile strength to a greater degree besides reducing the time of vulcanization.

CHEMICAL PATENTS.

THE UNITED STATES.

TREATMENT OF TYPEWRITER PLATENS, PROCESS AND COMPOSITION.—A composition consisting of two pounds of lump rosin, one ounce of shellac, one gallon denatured alcohol, one ounce of oil of sassafras and a one-half-ounce solution of coloring matter composed of one gallon of alcohol and eight grains of fuchsin, is used on the surface of rubber typewriter platens to produce an adhesive surface. (Robert Pennel Walker, assignor to the Neufeld Co., both of Asheville, North Carolina. United States patent No. 1,264,721.)

HARD RUBBER SUBSTITUTE.—A rubber substitute consisting of over 90 per cent elaterite, three to five per cent of resinous material and two to three per cent of sulphur added to the natural sulphur contents of the elaterite. (Paul Pickl, assignor to Emma Pickl, both of Chicago, Illinois. United States patent No. 1,265,108.)

THE DOMINION OF CANADA.

RUBBER MANUFACTURE.—The method of treating rubber comprising the incorporation with it of sulphur, titanic oxide, zinc oxide, a black carbon pigment, and an accelerator of vulcanization other than titanic oxide, and vulcanizing the mixture. The method of producing white vulcanized rubber consisting of filling the rubber with titanium oxide, and thereafter vulcanizing the rubber. (The Titanium Alloy Manufacturing Co., assignee of Louis Edward Barton, both of Niagara Falls, New York, and Henry Alfred Gardner, Washington, District of Columbia. Canadian patent No. 182,753.)

THE UNITED KINGDOM.

ELECTRIC CABLE RUBBER COVERING.—The electric cable conductor is covered with soft vulcanized rubber, having a small sulphur content, and a protective covering of hard vulcanized rubber having a large sulphur content. To prevent the inner covering from being overvulcanized the rate of vulcanization of the harder rubber is accelerated by the addition of a very small percentage of an organic substance such as dinitrosophenol. The acceleration may be further increased by the addition of magnesia or other inorganic accelerator, and in some cases the rate of vulcanization of the inner covering may be retarded by the use of phenylehydrazine, methylene blue, or glucose. To reduce the migration of sulphur from one layer of rubber to the other, a layer of cotton, thin metal tape, or other form of separation may be used. (E. A. Bayles, the Oakes, and British Insulated and Helsby Cables, Limited, both in Helsby, Cheshire, England. British patent No. 114,373.)

PLASTIC COMPOSITION.—A cement for the repair of india rubber, etc., consists of a mixture of approximately six parts of Swedish pitch, three parts of resin, one part of castor or other non-drying oil, and one-half part of cellulose wool, fuller's earth, pipe clay,

felt, hair, paper pulp, or the like. It is spread while warm on the warm dry surfaces to be united, or may be applied to one or both sides of a tape for wrapping round a leaking pipe. (A. R. Scarlett, 49 Southview Road, Shirley, Southampton, England. British patent No. 114,527.)

GERMANY.

LEATHER BITUMEN.—A leather bitumen product of high tensile strength is obtained by using leather in fibrous form. The leather fibers are impregnated with asphaltic petroleum residues, with heavy mineral oils of asphalt base, or semi-fluid residues from the distillation of asphaltic mineral oils, and also with bitumen solutions and rubber solutions. Soft and elastic products are obtained by impregnating the leather fiber with rubber solutions mixed with bituminous residues or solutions. (W. Reiner, German patent No. 294,050, February 13, 1916.)

NETHERLANDS.

SYNTHETIC RUBBER.—Metals are allowed to act on halogen addition products of hydrocarbons of the divinyl series, at the ordinary or raised temperatures, in the presence of oxygen, sulphurous acid, tetranitromethane or mixture of alkali or alkaline-earth metals and oxidizing agents of basic or neutral character. (I. Ostromyslenski. Netherlands patent No. 2,073.)

THE FRENCH REPUBLIC.

ELASTIC PRODUCT.—An elastic product free of sulphur is made as follows: a metallic compound of a fatty acid with high boiling hydrocarbon, is added to a drying oil which has been heated to a high temperature, 200-300 degrees C., for a long time, and heated with a known oxidizing agent. The usual fillers may be added and the product vulcanized, like rubber, after the addition of sulphur. (E. S. Ali Cohen, French patent No. 484,308. September 25, 1917.)

COAGULATING LATEX OF HEVEA BRASILIENSIS.—The latex is coagulated with the aid of the residues obtained in the distillation of wood in closed vessels, or by incomplete combustion, after extraction with alcohol and acetic acid. These residues may be employed alone, or with the addition of other substances. (Albert-Auguste Magen, French patent No. 484,536.)

COAGULATION AND PROCESS.—Improvements in coagulating rubber or similar substance and the process for preparing it prior to vulcanization. (General Rubber Co. French patent No. 485,791.)

PROCESS.—Method of treating rubber. (The Titanium Alloy Manufacturing Co. French Patent No. 485,975.)

SWITZERLAND.

ELASTIC PRODUCT.—Same as French patent No. 484,308 above. (E. S. Ali Cohen. Swiss patent No. 75,978.)

OIL OF THE WILD OLIVE FROM SOUTH AFRICA.

The so-called "wild olive" is the fruit of *Ximenia americana* Linn., described in the Bulletin of the Imperial Institute as a bush or small tree belonging to the natural order *Olacaceae*, and found widely distributed in tropical Africa, India, Ceylon, Brazil, the West Indies and the Tropics generally. The kernel of the fruit yields 65-67 per cent of oil. The expression of the oil being difficult, extraction with solvents is recommended.

The oil is non-drying, and could probably be used for lubricating or soap-making. The presence of a rubber-like substance renders it very viscous, but is not of a promising character as a rubber substitute. The Institute, however, recommends that in the event of any considerable quantity becoming available as a by-product in the extraction of the oil it should be tried for rubber compounding purposes.

RUBBER BELTING REPAIR CEMENT.

A high-grade cement for this purpose is made of 16 pounds of fine Pará rubber mixed with about 32 gallons of benzol. A cheaper grade of cement can be made with one pound of light Ceylon, $\frac{1}{2}$ pound of air-dried Pontianak, and $3\frac{1}{2}$ gallons benzol.

APPROXIMATE WEIGHTS OF SHEETS—SPECIFIC GRAVITY 1.00

COMPUTED BY GEORGE W. BOWERS

Basis—Cubic Foot = 62.40 Lbs. Avd.

Thickness, B. & S. Gage.	Thickness, Inches.	Ounces per Square Foot.	Ounces per Square Yard.	Thickness, Inches.	Ounces per Square Foot.	Ounces per Square Yard.
31	.....	.74048	6.66432	33/64	42.90	386.10
30	.....	.83200	7.48800	17/32	44.20	397.80
29	.....	.94016	8.46144	35/64	45.50	409.50
28	.....	1.04832	9.43488	9/16	46.80	421.20
27	.....	1.18144	10.63296	37/64	48.10	432.90
	1/64	1.30	11.70	19/32	49.40	444.60
26	.....	1.32288	11.90592	39/64	50.70	456.30
25	.....	1.48928	13.40352	5/8	52.00	468.00
24	.....	1.67232	15.05088	41/64	53.30	479.70
23	.....	1.88032	16.92288	21/32	54.60	491.40
22	.....	2.10496	18.94464	43/64	55.90	503.10
21	.....	2.37120	21.34080	11/16	57.20	514.80
	1/32	2.60	23.40	45/64	58.50	526.50
20	.....	2.66240	23.96160	23/32	59.80	538.20
19	.....	2.98668	26.88192	47/64	61.10	549.90
18	.....	3.33296	30.17664	3/4	62.40	561.60
17	.....	3.76896	33.92064	49/64	63.70	573.30
	3/64	3.90	35.10	25/32	65.00	585.00
16	.....	4.22656	38.03904	51/64	66.30	596.70
15	.....	4.75072	42.75648	13/16	67.60	608.40
	1/16	5.20	46.80	53/64	68.90	620.10
14	.....	5.33312	47.99808	27/32	70.20	631.80
13	.....	5.99040	53.91360	55/64	71.50	643.50
	5/64	6.50	58.50	7/8	72.80	655.20
12	.....	6.72256	60.50304	57/64	74.10	666.90
11	.....	7.54624	67.91616	29/32	75.40	678.60
10	.....	7.80	70.20	59/64	76.70	690.30
		8.47808	76.30272	15/16	78.00	702.00
	7/64	9.10	81.90	61/64	79.30	713.70
9	.....	9.51808	85.66272	31/32	80.60	725.40
	1/8	10.40	93.60	63/64	81.90	737.10
8	.....	10.69120	96.22080	1	83.20	748.80
	9/64	11.70	105.30	1 1/64	84.50	760.50
7	.....	12.00576	108.05184	1 1/32	85.80	772.20
	5/32	13.00	117.00	1 3/64	87.10	783.90
6	.....	13.47840	121.30560	1 1/16	88.40	795.60
	11/64	14.30	128.70	1 5/64	89.70	807.30
5	.....	15.13408	136.20672	1 3/32	91.00	819.00
	3/16	15.60	140.40	1 7/64	92.30	830.70
	13/64	16.90	152.10	1 1/8	93.60	842.40
4	.....	16.99776	152.97984	1 9/64	94.90	854.10
	7/32	18.20	163.80	1 5/32	96.20	865.80
3	.....	19.08608	171.77472	1 11/64	97.50	877.50
	15/64	19.50	175.50	1 3/16	98.80	889.20
	1/4	20.80	187.20	1 13/64	100.10	900.90
2	.....	21.43232	192.89088	1 7/32	101.40	912.60
	17/64	22.10	198.90	1 15/64	102.70	924.30
	9/32	23.40	210.60	1 1/4	104.00	936.00
1	.....	24.06976	216.62784	1 17/64	105.30	947.70
	19/64	24.70	222.30	1 9/32	106.60	959.40
	5/16	26.00	234.00	1 19/64	107.90	971.10
0	.....	27.03168	243.28512	1 5/16	109.20	982.80
	21/64	27.30	245.70	1 21/64	110.50	994.50
	11/32	28.60	257.40	1 11/32	111.80	1006.20
	23/64	29.90	269.10	1 23/64	113.10	1017.90
	3/8	31.20	280.80	1 3/8	114.40	1029.60
	25/64	32.50	292.50	1 25/64	115.70	1041.30
	13/32	33.80	304.20	1 13/32	117.00	1053.00
	27/64	35.10	315.90	1 27/64	118.30	1064.70
	7/16	36.40	327.60	1 7/16	119.60	1076.40
	29/64	37.70	339.30	1 29/64	120.90	1088.10
	15/32	39.00	351.00	1 15/32	122.20	1099.80
	31/64	40.30	362.70	1 31/64	123.50	1111.50
	1/2	41.60	374.40	1 1/2	124.80	1123.20

BOWERS' SPECIFIC GRAVITY TABLES.

In the August and September 1, 1917, and March 1, 1918, issues of THE INDIA RUBBER WORLD, the Bowers' tables for computing the approximate weights of disks, cylinders and square strips were published in full and several samples were given to illustrate the method to be followed in making computations.

The table for sheets which follows is used in determining the weights of articles of dimensions convertible into square feet or square yards. The range of the table is from 1/64 to 1-1/2 inches in thickness, with Brown and Sharpe's gages included.

SHEET TABLE.

The stated base of the sheet table is 62.40 pounds per cubic foot.

Weight of one cubic foot of water 39.1 degrees F. (maximum density)—62.425 pounds. (Kent 1916 edition, page 27.)

Weight of one cubic foot of water 62 degrees F.—62.3554 pounds in vacuo; 62.2884 pounds in air. (Circular of the Bureau of Standards Number 19, page 46.)

The variations in these standards are shown in the following example:

SAMPLE.

Slab 24 inches wide, $\frac{1}{2}$ inch thick, 24 feet long, specific gravity 1.70.

COMPUTATION.			
GOVERNMENT.	AIR.	VACUO.	GOVERNMENT.
62.2884	2	62.3554	2
124.5768		124.7108	
1.70		1.70	
87203760		87297.560	
1245768		1247108	
211.780560	pounds	212.008360	pounds
TABLE.		KENT.	
2.60		62.425	
48		2	
2080		125.850	
1040		1.70	
124.80		8809500	
1.70		125850	
873600		213.94500	pounds
12486			
212.1600	pounds		

The variation in the bases used in these tables is less than the variation of the specific gravity of commercial compounds; their combined use will be found practical and one can be used to check the other.

For example, after determining the weights of hose tubes, centers, and covers from the sheet table, the specific gravity of the frictioned duck center may be substituted for the superficial weight and all weights determined from the cylinder table.

These tables will be found useful by the salesman in promptly and correctly giving the customer requested information regarding the weight of a finished article.

CHEWING GUM MANUFACTURERS ORGANIZE.

The National Association of Chewing Gum Manufacturers and Allied Trades has recently been organized with offices at 19-25 Berkeley Building, New York City. The following officers and executive committee have been appointed:

Officers—Darwin R. James, Jr., President, (President of American Chicle Co.); B. L. Atwater, Vice-President, (Vice-President of Wm. Wrigley, Jr. Co.); M. D. Bromberg, Secretary, (Secretary of American Chicle Co.); C. M. Ford, Treasurer, (Secretary of Common Sense Gum Co.); Executive Committee—J. C. Cox, Chairman, (Treasurer of Wm. Wrigley, Jr., Co.); F. E. Barbour, (Secretary of Beech-Nut Packing Co.); George F. Hurd, (President of Autosales Corp.); George W. Wilson, (Manager of The Pulver Co., Inc.).

RUBBER TRADE INQUIRIES.

THE inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The editor is therefore glad to have those interested communicate with him.

(424.) A correspondent desires to know where he can obtain a machine for "frazing" hard rubber rods and tubes.

(425.) An inquiry has been received for the names of manufacturers of "Titanium" pigments used in rubber compounding.

(426.) A correspondent wishes to know where he can purchase rubber flux from a manufacturer.

(427.) An inquirer requests the addresses of manufacturers of twill- or cotton-covered rubber tubing from 27/32-inch to one-inch diameter, having a $\frac{1}{8}$ -inch wall.

(428.) An inventor requests the addresses of manufacturers of rubber specialties.

(429.) A subscriber asks for the addresses of makers of tire-cleaning machines.

(430.) A correspondent inquires where he can purchase ground whalebone.

(431.) A subscriber wishes to locate the manufacturer of a rubber chain-tip having a rubber buffer inside a four-pronged metal piece.

TRADE OPPORTUNITIES FROM CONSULAR REPORTS.

Addresses may be obtained from the Bureau of Foreign and Domestic Commerce or its district or co-operative offices. Request for each should be on a separate sheet, and state number.

(26,988.) An engineer in France is in the market for general electrical supplies, including insulating materials.

(27,014.) An agency is desired by a man in Australia for the sale of rubber goods of all descriptions.

(27,036.) A man in Italy desires an agency for the sale of raw cotton, caustic soda and heavy chemicals.

(27,046.) A firm in South Africa wishes to secure an agency for the sale of automobile tires and tubes and electrical specialties.

(27,061.) An agency is desired by a firm in France for the sale of rubber heels.

(27,066.) A man in Italy wishes to buy or secure an agency for the sale of rubber surgical goods.

(27,089.) A man in Spain desires an agency for the sale of surgical and dental rubber goods.

(27,095.) A chamber of commerce in French West Africa wishes to receive catalogs and price lists of barrels and sacks for packing gums and rubber.

NEW JERSEY ZINC CO. QUARTERLY STATEMENT.

The New Jersey Zinc Co., 55 Wall street, New York City, has issued its statement for the quarter ended March 31, 1918. A comparison with that for the corresponding quarter of 1917 shows the following figures:

	1918.	1917.
Income	\$5,338,796.37	\$6,735,444.66
Deductions:		
Interest on first mortgage bonds	\$40,000.00	\$40,000.00
Reserve for retirement of bonds	75,000.00	75,000.00
Federal taxes.....	1,620,000.00	1,735,000.00
Net income.....	\$3,603,796.37	\$6,006,739.23
Dividends:		
Extra 4 per cent		
March 10		\$1,400,000.00
Extra 4 per cent		
April 10		1,400,000.00
Quarterly 4 per cent		
May 10	\$1,400,000.00	1,400,000.00
Surplus for the quarter	\$2,203,796.37	\$1,806,739.23

¹ Excess profits tax at 8 per cent.

New Machines and Appliances

THE ENSIGN LACING MACHINE.

THIS machine performs with rapidity and accuracy the operation of lacing tennis shoes at the throat with thread, prior to the lasting process.

In operating the machine the operator brings the two sides of the shoe tops into position, so that the corresponding eyelets are back to back, and places them over spindles on the machine. Pressure on the foot-lever starts the machine and the thread is quickly passed through the eyelets and tied in a hard, unyielding knot, after which the properly laced upper is removed from the spindles, when the machine is ready to repeat the operation.

The machine can be readily adjusted to meet any condition. The moving of one lever automatically increases or decreases the interval between the spindles, so that the various spacings of eyelets can be quickly made. A simple adjustment makes it possible to vary the location of the knot, so that uppers may be tied to allow any desired spread at the throat. As the stretch of the thread used is uniform, one or two simple tests are all that are necessary in regulating the placing of the knot to secure the desired result. When this is determined the machine will continue to do the work with absolute accuracy,



one upper being the exact counterpart of all others laced at the same adjustment (United Shoe Machinery Corp., Boston, Massachusetts.)

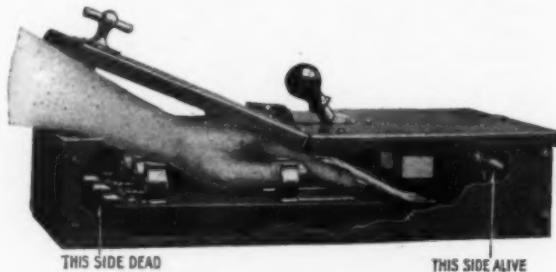
THE KRANZ AUTO-LOCK SWITCH.

As most of the workmen employed in rubber mills have little knowledge of electricity, it is desirable to use switches having no live parts exposed or accessible in the ordinary operation of the switches or when replacing fuses.

The safety switch here shown is intended for use on main circuits or wherever an ordinary knife-switch is applied. The switching parts and fuses are enclosed in a steel box, the cover of which is in two parts, one being screwed on to form a per-

manent covering for that end of the box containing the switch, and the other part being hinged so that it swings back and permits the renewal of fuses, which are located in this portion of the box. An ingenious latching mechanism makes it impossible to open the cover without first throwing the switch to the "off" position and rendering all fuses and other accessible parts dead. Thus fuses may be replaced at any time with absolute safety. As long as the door of the case is open, the switch contacts can not be closed.

By using a padlock, the switch handle can be locked in the "off" position, and no one can close the switch except the person

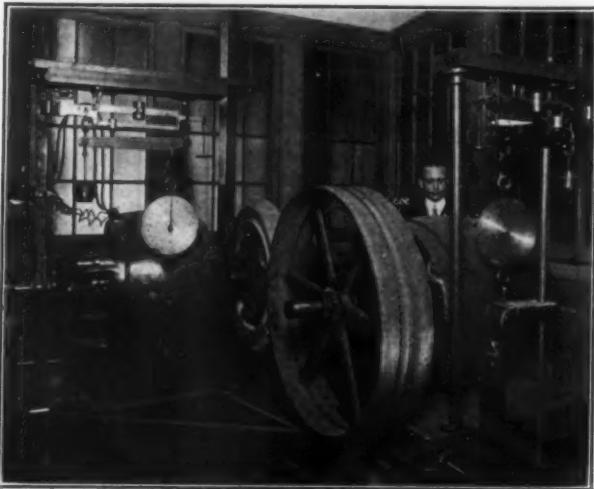


holding the key to the padlock. By using another padlock, the cover may be locked shut, so that the fuses cannot be tampered with. Either of these padlocks can be used independently of the other, so that the switch cover can be locked shut with the switch either "on" or "off," or the switch can be locked in the "off" position with the cover either locked or open.

These switches are supplied for 250, 500 and 600 volts, for either alternating or direct-current service, and in capacities up to 2,000 amperes. (Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pennsylvania.)

THE FIRESTONE TIRE-TESTING DYNAMOMETER.

Loss of power due to improper tire equipment is an important subject to every motorist, particularly at this time when gasoline



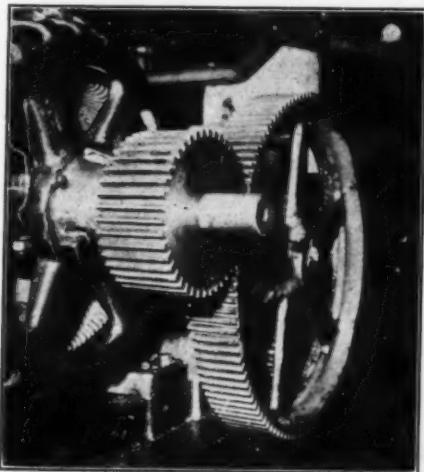
is costly and the curtailment of supplies is imminent. That manufacturers have appreciated the value of scientific tire design and

construction in relation to power losses is shown by the accompanying illustration of the Firestone tire-testing machine.

The machine here pictured is known as a dynamometer, by which the amount of power required to move a tire and to keep it going is exactly determined. When a tire is placed on the dynamometer it goes through the same kind of test as though it were on a motor car on a road. In making the test the tire is placed on a wheel which is revolved by an electric motor. In close contact with the tread of the tire and acting on the same principle as a set of gears is another wheel or drum which is connected with a generator. There is a gage which registers the amount of power required to revolve the tire. On the generator is another gage which registers the power given out by the tire, and the difference between the amount of power put into the tire in order to revolve it and the amount put into the generator by the tire shows the power loss. All friction has been equalized so that the register gives the exact amount of power lost in the driving of the tire. The object of this test is to eliminate features that cause power loss and to obtain a maximum speed from the motor with a minimum consumption of gasoline.

BAKELITE-MICARTA-D GEARS AND PINIONS.

Non-metallic gearing has a well-defined place in machine construction where the life of large cut-spur gears may be prolonged and objectionable noise eliminated by their application.



repairs and replacements is effected. The application of a pinion of this type to a 100-horse-power motor driving a pump is shown in the accompanying illustration. (Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pennsylvania.)

UNIVERSAL CALENDER SHELLS.

Calender shells are too well-known to require extended comment. However, the increasing demands of the rubber industry have necessitated many changes in calender shell manufacture that are well worth recording. In the present construction of a standard type of metallic shell, No.

14-gage stamped steel spiders are forced in and spaced on 12-inch centers, thereby strengthening the body of the shell and forming with the tight-fitting internal tube a strong-trussed construction. The malleable-iron heads are located two inches from the ends of the shell, making it prac-

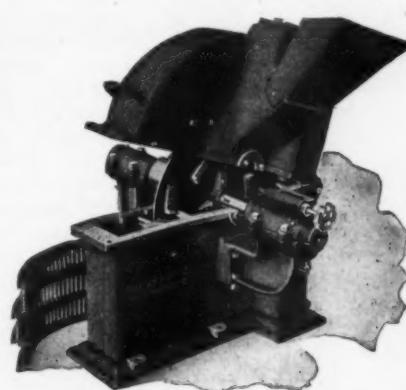
STANDARD SHELL WITH APRON.

THIS invention obviates the necessity of revolving the tire-core at high speed, while applying the several plies of fabric. The mode of operation is as follows: the end of the web of fabric *A* is pressed upon the ring core, and the support

tically impossible to knock or pry them out. Standard shell construction provides a groove to receive an apron which is readily inserted and held firmly without the use of tacks or clamps. (W. F. Gammeter, Cadiz, Ohio.)

DISINTEGRATOR FOR PULVERIZING HARD RUBBER.

Hard rubber dust, an important compounding ingredient in the manufacture of hard rubber articles, is made from hard rubber waste. This is first crushed and then passed through the disintegrator or "devil," as it is sometimes called, after which the material is reduced to flour by milling.



by referring to the illustration, the mechanical principle comprising a rapidly revolving steel disk provided with hardened steel beaters that beat the material against hardened steel bars. (The J. H. Day Co., Cincinnati, Ohio.)

TIRE BUFFING AND CLEANING MACHINE.

Manufacturers of full molded tires have found a tire buffing and cleaning machine is a very necessary adjunct to their tire building equipment. The type of machine here illustrated is designed and constructed along practical lines with the object of producing a machine that will buff-finish casings, giving the tires a clean finished appearance.

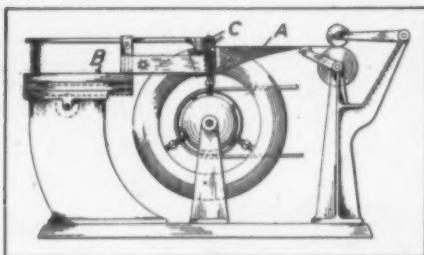


It is claimed that by using this machine one operator is able to handle the entire output of a large tire plant. The illustration is self-explanatory and clearly

MACHINERY PATENTS. TIRE-BUILDING MACHINE.

THIS invention obviates the necessity of revolving the tire-core at high speed, while applying the several plies of fabric. The mode of operation is as follows: the end of the web of fabric *A* is pressed upon the ring core, and the support

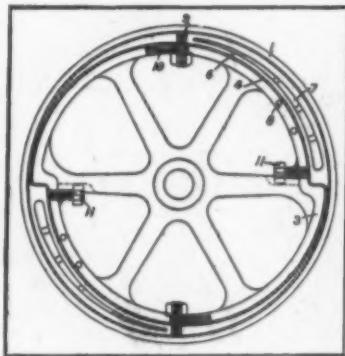
B is then moved up until the disks *C* bear upon the fabric web at or near its point of contact with the ring core. This is then rotated at a speed of about ten revolutions per minute, more or less, and during each single revolution draws a round of the fabric from the fabric supply onto its periphery.



The disks operate during rotation of the core to press down or stitch the fabric into intimate contact with the surface of the core substantially at the moment the fabric arrives at the core from the fabric supply. The disks are arranged to overlap each other so that the portion of fabric operated upon by one disk will be overlapped by the portion operated upon by the next adjacent disk, and thus all points on the fabric will be stitched down and shaped intimately to the configuration of the core. The above-described operation is continued until a sufficient number of superposed plies or layers of the fabric have been laid upon the core to build the carcass to its desired dimensions. (George F. Fisher, Plainfield, New Jersey, and Raymond B. Price, New York City, assignors to the Hartford Rubber Works Co., Hartford, Connecticut. United States patent No. 1,264,170.)

EXPANDING RIM FOR SOLID TIRES.

This invention relates to a permanent or temporary support for solid tires in which a wheel rim is expanded uniformly within the base band of the tire. In the illustration the rim is formed with two offset semicircular portions 3 and 4, between which and



the base 1 a ring 6 formed of wedge segments is disposed. The rim 3 and 4 and the segmental ring 6 have apertures 7 and 8, respectively, to receive a forcing tool by which a relative circumferential shift of these parts is effected, the tire being gripped by the expansion of the ring 6. Lateral displacement is prevented by set-screws 9 projecting from the ring 6 and guided in slots 10 in the wheel rim. The parts may be locked in adjusted position by other screws 11. —(B. Lee and S. H. Lee, Cow Lane, Sankey, Lancashire, England. British patent No. 113,818.)

OTHER MACHINERY PATENTS.

THE UNITED STATES.

- NO. 1,264,613. Collapsible tire-making core. F. B. Converse, Akron Ohio, assignor to The B. F. Goodrich Co., New York City.
1,264,641. Tire-shrinking machine. J. A. Hamilton, Tulsa, Oklahoma.
1,264,974. Electrical vulcanizer. J. H. Reeder, St. Louis, Missouri.
1,265,462. Ventilated vulcanizing pan. A. B. Low, Denver, Colorado.
1,265,579. Machine for making composite insoles. F. Zaleski, assignor to Reece Shoe Machinery Co.—both of Boston, Massachusetts.
1,265,640. Tire wrapping machine. A. H. Fisher, Lincoln, Nebraska.

THE DOMINION OF CANADA.

- 182,166. Rubber-making machinery. S. C. Davidson, Belfast, Ireland.
182,340. Steam hose gasket tool. C. J. Breitsprecher, Dunkirk, New York, U. S. A.

- 183,019. Tire skiver. B. E. Maxwell, Wichita, Kansas, U. S. A.
182,412. Machine for making rubber articles. The Canadian Consolidated Rubber Co., Limited, Montreal, Quebec, Canada, assignee of M. H. Clark, Hastings-on-Hudson, New York, U. S. A.

THE UNITED KINGDOM.

- 113,876. Machine for washing rubber, etc. F. Niblock, Plantation House, Singapore, Straits Settlements.
113,987. Apparatus for molding butt-ended tubes and similar articles of rubber or other plastic material. Dunlop Rubber Co., C. Macbeth, and R. H. Cunningham, 14 Regent street, Westminster.
114,209. Machine for molding plastic substances. W. Heap, 133 Moss Drive, and H. J. L. Dunlop, 38 Pentley Road, Princes Park, both of Liverpool.

PROCESS PATENTS.

THE DOMINION OF CANADA.

- NO. 182,494. Tire manufacture. A. H. Harris, Barberton, Ohio, U. S. A.
182,696. Tire retreading process. C. D. McGiehan, Jersey City, New Jersey, U. S. A.

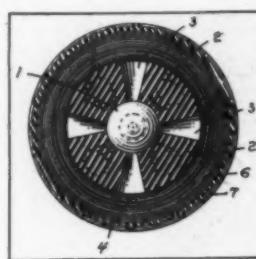
THE UNITED STATES.

- 1,265,420. Process of manufacturing rubber balls. B. R. Barva and F. T. Wichman, Fort Wayne, Indiana.

MISCELLANEOUS PATENTS.

METAL-CORED GOLF BALL.

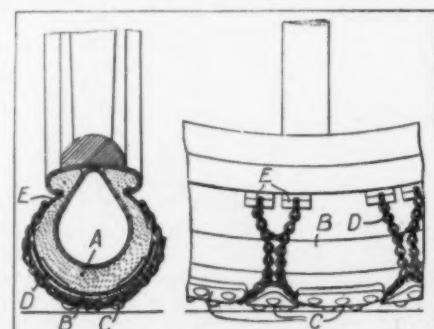
REFERRING to the illustration, 1, is a solid metal ball or core around which is molded and vulcanized a rubber core, 2, provided with a plurality of pockets, 3, preferably fourteen, six of which extend to the metal core, forming pins that accurately hold the core in the mold, while four pockets are provided on the equatorial and five on each hemispherical circumferences of the rubber core. A thin vulcanized rubber coating, 4, is then applied, to which a thin rubber cap is cemented, when the ball is wound with rubber thread, 6, and the outer cover, 7, preferably of balata, molded on the sphere. (Henry Z. Cobb, Winchester, Massachusetts, assignor to Revere Rubber Co., a corporation of Rhode Island. United States patent No. 1,255,388.)



A FRENCH NON-SKID TIRE PROTECTOR.

The pneumatic tire *A* is protected by a separate tread band *B*, preferably of leather, the tread of which is formed with triangular non-skid portions, *C*, arranged around the circumference with apices and bases oppositely placed and diagonal spaces between for accommodating the non-skid chains *B*.

The chains are of the ordinary type, being joined in pairs by side links and anchored to the bead-rim by hooks *E*. (J. Kappeler, French patent No. 484,401.)



The Michelin Tire Co., New Brunswick, New Jersey, has donated a large plot of ground to its employees for a war garden. The company also went to the expense of having the ground ploughed and placed in condition for planting.

New Goods and Specialties.

A RUBBER STOPPER DROPPER.

A CLEVER device which facilitates the measuring of any bottled liquid by drops and serves at the same time as a stopper for the bottle containing the liquid, has just been invented by Theodore J. Snyder. It is a rubber stopper the principle of the fountain-pen filler. Being hollow, it permits about a teaspoonful of liquid to be taken up when the air is removed by slight pressure of the fingers. Upon removing the cork from the bottle, it is then possible to force the contained liquid out in drops of regular size. The device fits bottles holding from one to four ounces and is, of course, non-breakable. (The B. F. Goodrich Co., Akron, Ohio.)



THE "WEAREVER" AUTOMOBILE GOGGLES.

New automobile goggles, known as the "Wearever," have appeared just in time to benefit summer automobilists. They fasten around the head with a strap in the usual way, but the

particular advantage of these goggles over others is that the framework is made entirely of soft rubber, forming a dustproof flexible appliance conforming to the shape of



the face. (Faultless Rubber Co., Ashland, Ohio.)

ARTISTIC RUBBER BATHING COSTUMES ON THE SUMMER BEACHES.

The possibilities of rubber as a material from which to make beautiful bathing suits and accessories are being developed to the full this season. The fine Pará rubber sheeting, in varied contrasting or blending colors, lends itself admirably to the purpose, and some very artistic creations have been devised. Some of these are shown here, but there are many others so different in color combination or decoration as to appear almost like entirely distinct models.

The suits themselves are made of sheet rubber, decorated with a rubber-cement paint which is not harmed by wetting and which does not affect the rubber as, for instance, oil paints would. The parasols and knitting bags which accompany some of these outfits are made of rubberized silk the same color as the suit, decorated with the same design.

The model on the left was developed in tan-colored rubber picked out with white, painted in a white-capped-ocean-and-seagull pattern. (Oppenheim, Collins & Co., 35 West 34th

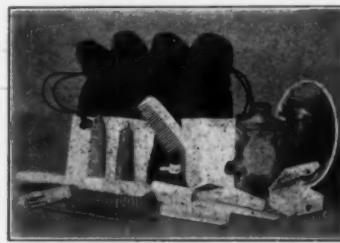


THE "VERY" HAIR BRUSH.

An English concern holds the patent on this brush which, before the war, was made for and distributed through a chain of drug stores in this country. No imports are being made at present but some stores have small stocks on hand. The brush is of the usual type in shape and appearance, except that the

bristles are mounted by twos in a rounded red rubber cushion which prevents them from easily falling out. (Hindes, Limited, Birmingham and London, England. American importers, The Geo. E. Evans Co., 3 West 18th street, New York.)

A RUBBER-LINED TRAVELING BAG.
There is no end to the practical and beautiful accessories provided for the woman who travels. A bag for toilet articles has been found so convenient that many of these devices take that form. This particular design is made of changeable silk with a lining of white rubber. It has a large bottom, eight and one-half by six and one-half inches, which permits one to stand the bag up if desired. The rubber lining prevents damage to any other articles with which



the bag may be packed when traveling. The bag is fitted with a full assortment of toilet articles, including a beveled mirror. (Mark Cross, 404 Fifth avenue, New York.)

ARTISTIC RUBBER BATHING COSTUMES ON THE SUMMER BEACHES.

street, New York City.) The cap which accompanied this was of the brand known as "Ocean Millinery." It comprised a diving cap of the usual shape, over which were applied rubber flowers, their centers made of small, rubber-covered molds cross-stitched in black.

One set not shown here comprised parasol and knitting-bag in addition to the slip-on dress and cape, and was carried out in green and black, effectively ornamented with applied triangles of differing light-colored rubber, outlined in black. The same design appeared on each piece.

The set on the right side included, besides the slip-on dress and cape, a parasol, and a cap with drapery like the present style of veil head-dress used by the Red Cross and other war workers. The cap had the usual diving-cap foundation. The decoration on this set is called the "Fish" design—fishes swimming through the water. The color scheme was Nile green, black, and white. (Stern Brothers, 41 West 42d street, New York City.)

RUBBER TUBING IN WAR.

Another use for rubber tubing in the manufacture of war equipment is illustrated here. In the steel helmets furnished by the Ordnance Department of the United States Government, rubber tubing cut into small pieces seven-eighths of an inch long is used to absorb shock. There are twelve of these used in each helmet, encased in a sheep-skin retainer. The steel helmet is lined with several pads of cotton, asbestos, and felt, with an adjustable inner lining drawn up with a linen drawstring. The sweat band is of black oilcloth. (Equipment Section, Procurement Division, Ordnance Department, Washington, D. C.)

THE "ZEPHYR" PLAY BALL.

The new toy here displayed is made with an outer covering of sateen in different contrasting colors. Inside is a rubber bladder which may be inflated or deflated at will by means of a patented self-closing valve which protrudes through one end. (The Gregory Rubber Co., Akron, Ohio.)

A KITCHEN CONVENIENCE.

A new style of plumbing fixture is shown here. It can be installed in the place of the ordinary set of faucets, and is produced by a manufacturing concern which makes a specialty of

such devices. This combination is made up of a set of three faucets and attached hose with spray nozzle on the end. With this outfit it is possible to blend hot and cold water as desired and use it direct from the center faucet or divert it through the hose to the nozzle and use it as a spray for any desired purpose, such as rinsing dishes, the sink, etc. (H. Mueller Manufacturing Co., Decatur, Illinois.)

THE NEW "SHIR GAR" GARTER.

Every month shows new patents issued on some form of garter, most of which employ elastic webbing in some way. Here is a new style of garter for men. It is called the "Shir Gar," and is attached at the top to the lower edge of the shirt. At the bottom, one model fastens around the leg, while the other is attached to the top of the hose. It is claimed for these garters that they simultaneously hold the shirt down and the hose up, tending to prevent varicose veins. The manufacturer also makes other models. One has a triangular pad on one side of the strap which goes around the leg. Another has only a vertical strap with a single fastener. Both have two clasps at the top. All models are made of elastic



webbing and are supplied with the usual ball grip clasps. (Washington Manufacturing Co., Nashville, Tennessee.)

AN AERIAL BALLOON.

These are days of solemn import when serious questions occupy the mind and heart, but, nevertheless, the children are not forgotten. Indeed, it seems sometimes that particular attention is given to producing articles for their instruction and amusement that, at the same time, fire enthusiasm and stimulate patriotism. Every child is interested in balloons and airplanes, if only to "see them go," and one manufacturer has taken advantage of this fact in devising an aerial balloon with



an attached propeller. The balloon itself is sixteen inches long and is inflated by means of a valve at one end. Attached to the balloon is a propeller three and one-half inches in diameter, which causes the balloon to ascend anywhere, either indoors or out. A patent has been applied for on this article by H. Marui, the inventor. (H. Marui & Co., 31 Broadway, New York.)

THE "NEVER-LOSE" ERASER.

Anybody who has ever operated a typewriter and used the ordinary eraser which is always disappearing at the exact moment when it is most needed, will appreciate the "Never-Lose" eraser, shown in the accompanying illustration. The eraser itself is of fine quality rubber, just abrasive enough to make a smooth, clean erasure. The eraser is protected by metal disks riveted at the center, but one of



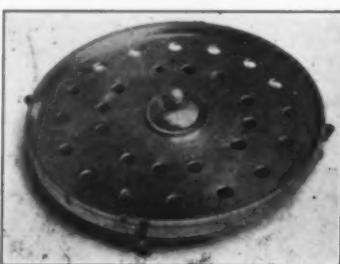
them is extended on top to form a long, straight piece. Being of special soft, tough steel, it is easily bent over to form a hook, and this hook can be slipped over the typewriter frame at the side of the machine. This keeps the eraser out of the way when not wanted and guarantees its being found when needed. (Pershing &

Co., South Bend, Indiana.)

THE GAME OF "300."

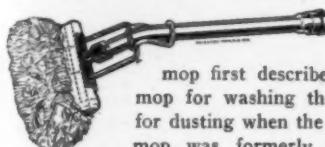
A new game which employs a rubber ball propelled by a spring-lever is shown here. The board is provided with rubber feet to prevent marring of any surface on which it may rest when in use. The board is perforated in a series of circles, with round holes large enough to permit the ball to fall through. Each opening is numbered and this number counts toward the final score. The outer rim of the board is trough-shaped to prevent the ball rolling off. (Robert A. Peacock, Delaware City, Delaware.)

"Good Luck" red rubber rings for the cold pack canning process, to fit all standard jars, are a new product of the Boston Woven Hose & Rubber Co., Cambridge, Massachusetts.



THE "NO-MAR FLUSH-BRIGHT" AUTO MOP.

A new mop for the automobile owner and garage man has been devised, which has a cover of rubberized cloth on top, to prevent the seeping back of water when it is used above the level of the arms of the operator. This mop is part of an automobile cleaning outfit which combines several attachments which are interchangeable on the one handle. These comprise



a special nozzle for softening heavy incrustations of mud, the body water-mop first described above, a stiff fiber brush mop for washing the running gear, and a mop for dusting when the weather is dry. The water-mop was formerly made with only a canvas covering, which proved to be unsatisfactory in use; the rubberized cover was thereupon devised and has proved a practical protection to the person using the mop. (The American Textile Manufacturing Co., Box 6, Station E, Cleveland, Ohio.)

FIREMAN'S SMOKE FILTER.

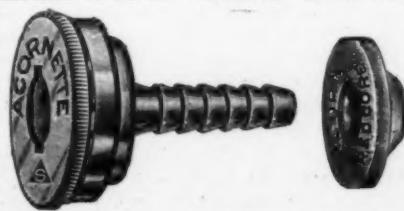
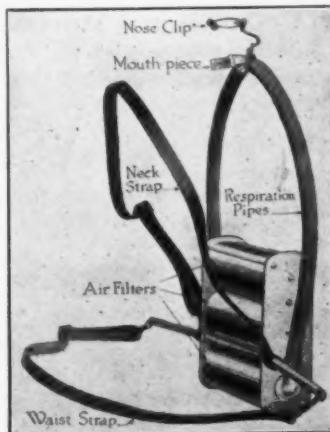
We hear much about the danger and destructiveness of fire in these days of conservation, and the picture called up before many of us reflects the firemen fighting against tremendous odds with an inconsiderable amount of protective personal equipment. This was more or less true in former times, but, to-day, modern firemen are equipped as

carefully for their work as those in any other line of service. The "Garnett" smoke and ammonia filter here illustrated has been devised particularly for firemen, to protect them against what they have feared most in fighting fire in chemical plants and factories where dense, suffocating smoke is liable to be encountered. This filter, it is claimed, does fulfil its mission. It consists of nine simple parts and is guaranteed for three years against the necessity of replacing any of these. The nose clip makes it necessary

to breathe through the mouth, and the mouth-piece of aluminum and rubber is connected by respiration pipes to three aluminum casings containing the neutralizer. A fireman wearing one of these filters can remain without harm for an indefinite period in a small space dense with smoke or fumes. The filter is fastened on by two straps, one around the neck and one around the chest or waist. (Herbert Garnett, 453 Prospect avenue, N. E., Grand Rapids, Michigan.)

THE "ACORNETTE" PUMP CONNECTION.

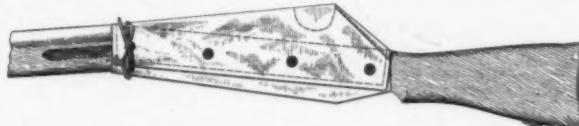
A new pump connection called the "Acornette" differs from other members of the "Acorn" group manufactured by the same concern, in that the barrel design is different. The length of the barrel has been reduced considerably to prevent buckling of the washer inside the housing. The "Red Core" washer is of resilient rubber with a red core to



resist hard wear. The "Acornette" forces the washer directly over the valve stem. It is easily adjusted and has a knurled cap. The washers are put up in quantity, separate from the connection, for replacement purposes. (Stevens & Co., 375 Broadway, New York.)

GOVERNMENT BREECH-LOCK MECHANISM COVER.

The new cover furnished by the United States Government for protecting the breech-lock mechanism of rifles is made of sixteen-ounce rubberized olive drab cotton drill, kept in place



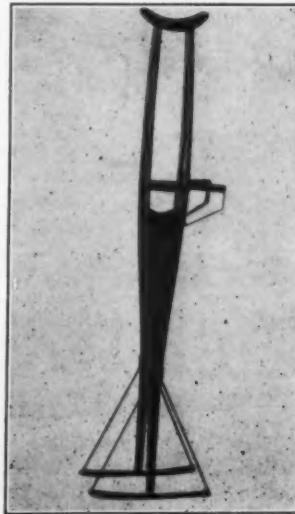
with snap fasteners and a leather thong. It is cut according to certain specifications, and is shaped to fit the rifle. It is duly reinforced on the top where the wear possibly would be greatest. (Ordnance Department, Washington, D. C.)

AN AUTOMOBILE-HEADLIGHT GLASS CUTTER.

A new glazier's tool called the "Red Devil," of which a cut appears herewith, permits automobile owners, dealers and garage men to cut their own headlight glasses, from two to twenty-two inches in diameter. It consists of a metal base with a rubber mat to prevent slipping, a nickel-plated steel rod graduated into sixteenths of an inch and hinged to the base, and a cutting head with adjustable set-screw. (Smith & Hemenway Co., Inc., 120 R Coit street, Irvington, New Jersey.)

A RUBBER-TIRED ROCKER CRUTCH.

A doctor has invented a crutch which has decided advantages over the ordinary design. Instead of a point to rest on the ground, there is a rocker fitted with a non-skid bicycle-tire tread three-quarters of an inch wide. This rocker, of course, forms a curve, and this permits a person to retain approximately the normal height of the shoulder, which was impossible with the old-style crutch. There are metal handles on the sides of the crutches which aid the user in going up and down stairs or hills, the crutches being so placed as to bring the handles in front to assist progress against the wind, over rough ground, or uphill, and behind the usual ones to retard movement downward. Actual experiment has shown that these new-style crutches save fourteen per cent of the steps necessary with the ordinary kind. They also sink less in snow or soft earth. The same principle has been applied to a foot extension, a leg brace, an artificial leg, and even a cane. (Robert G. Hall, M.D., 616 Morgan Building, Portland, Oregon.)



THE EDITOR'S BOOK TABLE.

ALLEN'S COMMERCIAL ORGANIC ANALYSIS. VOLUME IV.
Edited by W. A. Davis, B. Sc., A. C. G. I., and Samuel S. Sadler, S. B.
P. Blakiston's Son & Co., Philadelphia, Pennsylvania. (Octavo, cloth,
466 pages, \$5.00 net.)

"ALLEN'S Commercial Organic Analysis" is so well and favorably known that it requires no further commendation.

Volume IV—"Resins, Rubber, Gutta-Percha and Essential Oils" is throughout of particular interest and value to rubber chemists since many of the substances treated are of more or less importance in the rubber manufacturing industry. The plan of treatment includes the occurrence, varieties, composition, uses and characteristics of each substance, together with methods of test and analysis.

The section devoted to rubber and gutta percha comprises 56 pages. Brief mention of the sources and composition of rubber latex is followed by an account of the constitution of the rubber hydrocarbon with reference to the work of Harries and Weber. The methods of analysis of raw rubber and vulcanized rubber mixings are chiefly those originated by Weber and others of his day, whose work was of great interest and importance and served as the basis for development by later investigators. The inclusion of a selection of the more recent analytic methods would have increased the value of the book as a laboratory manual. The manufacture and analysis of rubber substitutes is outlined, and reclaimed rubber is similarly treated in a short section, quite inadequate to the importance of reclaimed rubber. Recent authoritative figures show that the rubber manufacturing industry in the United States alone requires 222,728,095 pounds of reclaimed rubber annually or 63 per cent of the weight of crude rubber employed in the same time. In view of present day improvements in methods of reclaiming, it is probably no longer correct to say that it "usually contains oils, tar, asphalt and similar additions," although the cheaper grades may.

GALVANIZING AND TINNING. BY W. T. FLANDERS. DAVID Williams Co., New York City. (Cloth, octavo, 350 pages, illustrated.)

The book is described in its sub-title as "A Practical Treatise on the Coating of Metal with Zinc and Tin by the Hot Dipping, Electro-Galvanizing, Sherardizing and Metal Spraying Processes, with Information on Design, Installation and Equipment of Plants."

In collaboration with other experts the author presents a very informing and practical work on metallic protection of iron and steel from corrosion. Among the processes treated, tinning and sherardizing are of special interest to rubber manufacturers, the first to makers of insulated wire, and the second to makers of hose and inner tubes for the effective prevention of injury to the polished-steel mandrels used in the building and vulcanizing processes.

Sherardizing affords the long-desired, not to say ideal method for this purpose, and will certainly appeal to every rubber man as a measure of true economy. The chapters on sherardizing treat of plant, materials, process and cost, and are well-illustrated by plans and views.

MOTOR TRUCKS OF AMERICA, VOLUME 6, 1918. THE B. F. GOODRICH Rubber Co., Akron, Ohio. (Large octavo, paper cover, 168 pages.)

This is the sixth annual edition of a publication which has proved its usefulness in the motor industry, and the steady advancement of the motor truck branch of this industry makes it all the more important. Every motor truck made in this country is fully described in a careful and uniform tabulation, and with very few exceptions half-tones show at least one truck of each style manufactured. An introductory article entitled "A Standard System for Recording Truck Operating Costs," by S. V. Norton, of the Goodrich company, gives forms for reports, cost sheets, earning capacity, and ledger records. The book is of the usual Goodrich excellence in typography.

NEW TRADE PUBLICATIONS.

JOHN ROYLE & SONS, Paterson, New Jersey, is sending out a well printed, finely illustrated folder giving full details of this firm's machines for making inner tubes, insulating wire, etc. The drawings are particularly clear, and nearly if not as instructive as an examination of the machines themselves.

THE LINK-BELT CO., CHICAGO, ILLINOIS, HAS JUST SENT OUT ITS 312th booklet, which is of the usual excellence of its predecessors. This one treats of "The Efficient Drive for Machine Tools" and shows by text and illustration the advantages of using the link-belt rather than leather belts on various machines.

THE CONVERSE RUBBER SHOE CO., MELDEN, MASSACHUSETTS, has published a beautiful catalog of its de luxe line of rubber-soled footwear which differs very materially from the standard cemented tennis lines usually made in rubber factories. The shoes are lasted, as are canvas shoes made by leather manufacturers, but the soling process is distinctly different from cemented tennis or machine-welted goods. The catalog has an embossed cover in white, pale tint and gold. The illustrations of the shoes are fine specimens of half-tone engravings printed in natural colors, each shoe pictured and described on a separate page, the whole forming a handsome and useful booklet for the shoe dealer.

THE FOOTE MINERAL CO., INC., PHILADELPHIA, PENNSYLVANIA, publishes a monthly house organ called "Mineral Foote-Notes," each issue of which contains an original monograph by an authority on some rare metal, besides extracts of similar import from current technical and trade journals. A departure from the general custom of such house organs is free distribution to actual customers while a subscription price is charged to others, who, on becoming customers, have ten dollars deducted from their first bill, if they are subscribers at the time. This plan will be watched with interest.

RULES AND REGULATIONS OF THE WAR TRADE BOARD, NUMBER 2, a manual for shippers, has been issued, superseding the previous publication of this body. It contains additions and changes in the regulations, besides much new matter. The previous edition was devoted to exports, but this concerns itself with the official statements and rulings of the ten bureaus of the board. Copies are obtainable by addressing the War Trade Board, Washington, District of Columbia.

IT IS A PLEASURE TO ANNOUNCE THE REAPPEARANCE OF THE "Journal d'Agriculture Tropicale," the publication of which was discontinued for almost four years. The present issue is No. 158, April 30, 1918, and follows No. 157 of July 31, 1914. It is to be incorporated with the series for the fourteenth year, which will be completed after the war.

BEFORE A MEETING OF THE AMERICAN MANUFACTURERS' EXPORT Association during the National Foreign Trade Convention at Cincinnati, E. M. Herr, president of the Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pennsylvania, delivered an address replete with constructive suggestions on the nation's foreign trade prospects. To retain and develop the position we now hold in the commercial and financial world, and to utilize profitably in reciprocal foreign trade the great industrial plants and merchant marine which we shall have after the war, he said, is one of our greatest problems, demanding the attention of the best minds of the nation. Many opportunities, needs, and safeguards were outlined.

JUDICIAL DECISIONS.

A. G. SPALDING & BROTHERS v. A. W. GAMAGE, LIMITED.—In the Court of Appeal, London, from February 26 to March 20, 1918.

This long-pending suit, mention of which was made in the November 1, 1917, issue of THE INDIA RUBBER WORLD, has finally ended. The plaintiffs, who sued defendants for passing off certain of the plaintiff's old and discarded footballs as new and improved footballs, were awarded £7,000 by the Official Referee in the House of Lords. Gamage brought the case to the High Court of Justice where the amount was cut to £100. From this decision Spalding appealed and the order as to the damages was varied by substituting £250 for £100, each party bearing his own costs. (The Illustrated Official Journal, Volume 35, page 101.)

PERLMAN v. UNITED STATES, United States Supreme Court, May 6, 1918.

It was finally decided that L. H. Perlman, president of the Perlman Rim Corp., could not enjoin the use of articles voluntarily impounded with the Clerk of the District Court by the United States Attorney.

As an outgrowth of the case of Perlman Rim Corp. v. Firestone Tire and Rubber Co., Perlman was indicted for perjury, and he sought through various courts to prevent the use of the property mentioned, claiming that such use would be contrary to the Fourth and Fifth Amendments to the Constitution, which provide against unreasonable seizure of property, and that no defendant shall be compelled to testify against himself. (Supreme Court Reporter, Vol. 38, p. 417.)

ARMY AND NAVY AWARDS.

ARMY MEDICAL SUPPLIES.

THE following awards have been made by the surgeon general of the Army:

AUTO TIRES.—50, 35 by 5 inches, \$1,887.50, Quick Tire Service Co., Louisville, Kentucky.

CATHETERS.—4,800 flexibles, \$0.0525 each, and 1,250, \$0.08 each, United States Rubber Co.

CLARIFYING TUBES.—50,000, \$10,500, United States Rubber Co., New York City.

DROPPERS.—12,100 medicine droppers, \$1,411.67, Seamless Rubber Co., Inc., New Haven, Connecticut.

GAS MASK PARTS.—50,000 hard rubber castings, \$17,625; Luzerne Rubber Co., Trenton, New Jersey. 100,000 flutter valves, \$15,000, Miller Rubber Co., Akron, Ohio.

RECTAL TUBES.—500, \$0.2067 each, United States Rubber Co.

RUBBER CUSHIONS, SMALL.—1,250, \$2.90 each, United States Rubber Co.

RUBBER ICE BAGS.—8,000, \$6.20 per dozen; 2,000, \$1,033.33, Tyer Rubber Co., Andover, Massachusetts.

RUBBER SHEETING.—20,000 yards, 54 inches wide, \$14,800, Hodgman Rubber Co., Tuckahoe, New York.

RUBBER TUBING.—200 pounds maroon, \$360; 200 pounds maroon, \$468; 60,000 feet, \$2,550, Faultless Rubber Co., Ashland, Ohio.

SPATULAS.—2,500 hard rubber spatulas, 6 inch, \$510.42, American Hard Rubber Co., New York City.

GENERAL ENGINEER DEPOT AWARDS.

The following awards have been made by the purchasing office, general engineer depot, United States Army, Washington, District of Columbia:

CEMENTLESS PATCHES FOR INNER TUBES.—\$0.25 per box, The B. F. Goodrich Rubber Co., Akron, Ohio.

FRICITION TAPE.—8,000 rolls, \$0.153, Boston Woven Hose & Rubber Co.

HIGH GRADE INSULATING TAPE.—\$0.37 and \$0.33½ per pound, Boston Woven Hose & Rubber Co., Cambridge, Massachusetts.

LINEMEN'S RUBBER GLOVES.—Size No. 9, \$175, Faultless Rubber Co.

RUBBER RINGS FOR GLASS PACKING.—600, \$0.0195, The B. F. Goodrich Rubber Co.

NAVAL SUPPLY AWARDS.

The following awards have been made for furnishing naval supplies:

COPPER WIRE.—\$220, Western Electric Co., Inc., New York City; \$448.50, Standard Underground Cable Co., Pittsburgh, Pennsylvania; \$200, Marion Insulated Wire and Rubber Co., Marion, Indiana.

ELECTRICAL WIRE.—\$452.17, Belden Manufacturing Co., Chicago, Illinois; \$227.67, United States Rubber Co., New York City; \$72.37, Western Electric Co., Inc., New York City; \$1,361.70, Standard Underground Cable Co., Pittsburgh, Pennsylvania.

FLAX PACKING.—135,000 pounds, \$46,000, Belmont Packing and Rubber Co., Philadelphia, Pa.

HOSE.—1,600 feet, \$560, under supplementary opening, Empire Rubber & Tire Co., Trenton, New Jersey.

IGNITION CABLE.—1,500 feet, \$59.30; \$289.43; The B. F. Goodrich Rubber Co., Akron, Ohio.

LIGHTING AND POWER CABLE.—23,000 feet, finished material, \$1,072.40, Standard Underground Cable Co., Pittsburgh, Pennsylvania.

RUBBER-COVERED WIRE.—\$380, The B. F. Goodrich Rubber Co., Akron, Ohio.

RUBBER GASKETS AND CUSHIONS.—21,000, \$511.25, Western Rubber Co., Goshen, Indiana.

RUBBER-LINED COTTON FIRE HOSE.—12,000 feet, \$10,850; United & Globe Rubber Manufacturing Cos., Washington, District of Columbia.

TELEPHONE WIRE AND CONNECTORS.—\$53.30, United States Rubber Co., New York City; \$864, John A. Roebling's Sons Co., Trenton, New Jersey; \$30, Western Electric Co., Inc., New York City.

PANAMA CANAL AWARD.

The following award has been made for furnishing supplies for the Panama Canal.

TIRES.—24, 36 by 6, \$1,692.48, 60 days, Firestone Tire & Rubber Co., Washington, District of Columbia.

UNITED STATES MARINE CORPS TIRES.

The contract for furnishing the Marine Corps with motorcycle tires and tubes has been awarded to The B. F. Goodrich Rubber Co., Akron, Ohio, at \$7.95 each for 100 motorcycle tires, 28 by 3 inches, and \$1.25 each for 100 tubes to fit the tires.

MISCELLANEOUS SUPPLIES.

The following awards have been made by the surgeon general of the Army for furnishing miscellaneous supplies:

AUTO TIRES.—250, \$14.06 each, 250 inner tubes, \$2.40; Quick Tire Service Co., Louisville, Kentucky.

CHIN RESTS.—50,000, \$0.09 each, Goodyear Tire & Rubber Co., Akron, Ohio.

CLARIFYING TUBES.—50,000, \$15,000, Goodyear Tire & Rubber Co., Akron, Ohio.

HAND ATOMIZERS.—6,000, \$4,920, DeVilbiss Manufacturing Co., Toledo, Ohio.

PARTS FOR GAS MASKS.—50,000 hard rubber castings, \$17,625, Joseph Stokes Rubber Co., Trenton, New Jersey.

RUBBER GLOVES.—10,000 pairs light, \$3.16 dozen pairs; 10,000 medium, \$3.40 dozen pairs; 5,000 heavy, \$4.48 dozen pairs, Faultless Rubber Co., Ashland, Ohio.

RUBBER HOSE.—400 lengths rubber hose, \$2,200; The B. F. Goodrich Rubber Co., Akron, Ohio.

The Obituary Record.

DR. JOSEPH CYRUS STEDMAN.

DR. JOSEPH C. STEDMAN, who died from heart trouble at the Johns-Hopkins Hospital, Baltimore, Maryland, June 14, 1918, had a host of friends in the rubber trade. A speaker at one of the first dinners of the New England Rubber Club, he was elected to membership by general acclamation. Thereafter he served on committees, attended all meetings and showed a lively interest in the club's welfare. He was one of the original members of the Massachusetts Automobile Club, a member of the Country Club, Brookline, Massachusetts, of the Massachusetts Artillery, and of many other organizations. A man of public spirit, generous to a fault, of wide acquaintance, and possessed of a rare gift for making friends, his loss will be keenly felt.

DR. J. C. STEDMAN



LONG A LEADER IN RUBBER MANUFACTURING.

In the June 1, 1918, issue of THE INDIA RUBBER WORLD was published a notice of the death, with a brief biographical sketch, of A. L. Comstock, who was for many years prominently connected with the American Rubber Co., Cambridge, Massachusetts. It was our desire that a portrait accompany that notice, but because of the difficulty in securing a photograph, and the consequent delay, it was impossible to include the half-tone here presented, which the hundreds of friends who knew him during his long and active service in the trade will undoubtedly pronounce an excellent likeness of the deceased.

A. L. COMSTOCK.

A PIONEER F. M. S. RUBBER PLANTER.

C. Malcolm Cumming, who died in England recently from heart failure, at the age of 51 years, was one of the pioneers of the rubber planting industry in the Far East. He went to Ceylon in 1888 in the interests of tea planting. The next year he was employed on a coffee plantation near Kuala Lumpur. In 1895 he established the Linggi Liberia Coffee Co. and planted a little rubber the succeeding year. Coffee not proving excessively remunerative, the company was reconstructed as a rubber company, and named the Linggi Plantations, Limited. Mr. Cumming became general manager, and it was under his direction that the company developed into one of the wonderful dividend payers in the Straits Settlements. Mr. Cumming was also connected with several other rubber plantation enterprises. In 1911 he returned to England, taking up his residence at



Lydicke, Slinfold, Sussex. Always public-spirited, he was very active in the work of the Red Cross and the Church Army. He was instrumental in raising a fund whereby many British soldiers were provided with rubber boots and other rubber goods. It is thought that his active exertions in this and similar work hastened his end.

PROMINENT IN THE CRUDE RUBBER TRADE.

Cable despatches received early last month tell of the death on shipboard June 6 and burial at Nagasaki, Japan, of Willis Garson Ryckman, president of W. G. Ryckman, Inc., crude rubber brokers of New York City.

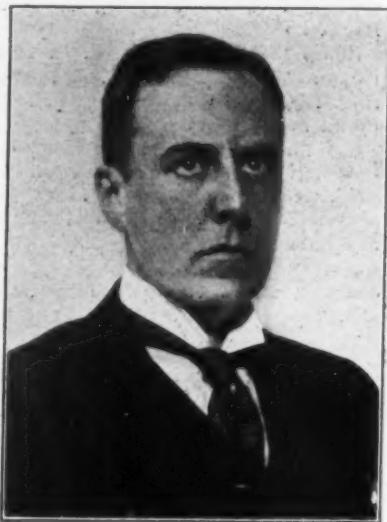
Mr. Ryckman was born in Brooklyn, New York, April 23, 1880, and educated in the public schools of that city. Graduating from the Manual Training High School, he entered the employ of the Mechanical Rubber Co., and in 1906 went to the Intercontinental Rubber Co., as salesman. In 1908 he began independently as a crude rubber broker, two years later associating with him Charles B. Kaufman, who, on the incorporation of the concern in May 1917, became secretary, Mr. Ryckman being president.

Mr. Ryckman left New York last February for Singapore on business connected with his company, and was on the return trip when a fever, complicated with kidney trouble, caused his death. He leaves a widow and two children. He was well-known in the rubber trade, being chairman of the Arbitration Committee of the The Rubber Association of America, Inc.; vice-president of the Oil and Oil Seeds Association of New York City; and secretary of the Rubber Trade Association of New York City. He was a thirty-second degree Mason, and Past Master of Aurora Grata Lodge. He was a staunch friend, of sterling character, and was one of the most respected members of the crude rubber trade.

A VETERAN HOSE MAKER.

T. H. Barrett, who recently died in Akron, Ohio, was one of the pioneers of The B. F. Goodrich Co. hose and belting departments, having worked continuously for that company since 1893. The first rubber belting, rubber hose and cotton hose manufactured by the Goodrich company was made under his supervision. At the time he assumed charge of the hose department all hose was made by hand, and at the time of his death the output of this article made on the machinery he was instrumental in designing, was about 100,000 feet per day.

Replete with information for rubber manufacturers—Mr. Pearson's "Crude Rubber and Compounding Ingredients."



W. G. RYCKMAN.

News of the American Rubber Trade.

NEW YORK CRUDE RUBBER CLEARING HOUSE.

NEW YORK importers, brokers and dealers in crude rubber formed a clearing house last month for the purpose of adjusting contract disputes arising from the recent government regulation of crude rubber imports and prices.

The following resolutions, referring only to contracts calling for May, June and July shipment, and equivalent arrivals for August, September and October at New York, or for June, July and August arrival at the Coast, were adopted:

Contracts for shipment shall be extended, if desired, to a date which will not be later than 15 days after the publication of the new government regulations for the next period, which will follow the present restriction period covering May, June and July shipments. If on or before this date the buyer has not furnished allocation certificates to provide for proper shipment, the contract is to be liquidated at the then prevailing c. i. f. New York price for prompt shipment from the primary market stipulated in the contract.

Contracts for arrivals shall be treated like shipment contracts, but the settlement price shall be advanced two cents over the price fixed for shipment contracts. In case of postponement, the same will be made free of charge to the buyer.

If there shall be any difference of opinion between the parties to the contract as to the price prevailing in the primary markets such price is to be settled by the arbitration committee. We recommend that contracts be "washed" out as much as possible. Your committee urges therefore that copies of such contracts be lodged as soon as possible with the clearing committee.

Contracts for all rubber that is free of allocation, in accordance with resolutions passed, at the last meeting, if defaulted, shall be "washed out" at the maximum prices laid down by the War Trade Board. This resolution also covers rubber sold for shipment prior to May 8, provided the seller has been found in default.

The above resolutions apply only to dealers in crude rubber.

The arbitration committee is composed of Otto Mayer, H. A. Astlett, J. T. Johnstone, H. H. Henderson and Edward Maurer. Those appointed to serve as a clearing committee are W. H. Stiles, G. G. Gove and L. P. McNamara. On both committees Wm. E. Bruyn will act as chairman *ex officio*.

DIVIDENDS.

The American Chicle Co., New York City, declared its regular quarterly dividend of one and one-half per cent on preferred stock, payable July 1 to stock of record June 20, 1918.

The Apsley Rubber Co., Hudson, Massachusetts, declared its regular semi-annual dividend of three and one-half per cent on preferred stock, payable July 1 to stock of record June 30, 1918.

The Boston Woven Hose & Rubber Co., Cambridge, Massachusetts, declared a quarterly dividend of \$3 a share on common stock and a semi-annual dividend of \$3 a share on preferred stock, payable June 15 to stock of record June 1, 1918.

The Brunswick-Balke-Collender Co., Chicago, Illinois, declared a quarterly dividend of one and three-quarters per cent on its preferred stock, payable July 1 to stock of record June 20, 1918.

The Canadian Consolidated Rubber Co., Limited, Montreal, Quebec, Canada, declared a quarterly dividend of one and three-quarters per cent, payable June 29 to stock of record June 21, 1918.

The Canadian General Electric Co., Limited, Toronto, Ontario, declared a quarterly dividend of two per cent, payable July 1 on stock of record June 15, 1918.

The E. I. du Pont de Nemours Co., Wilmington, Delaware, declared its quarterly dividend of four and one-half per cent on

common stock, payable June 15 to stock of record May 21, and its quarterly dividend of one and one-half per cent. on debenture stock, payable July 25 to stock of record July 10.

The Fisk Rubber Co., Chicopee Falls, Massachusetts, declared its regular quarterly dividend of one and three-quarters per cent on second preferred stock, payable June 15, 1918.

The Kelly-Springfield Co., New York City, declared a quarterly dividend of \$1.50 on its six per cent preferred stock, payable July 1 to stock of record June 15, 1918.

The Keystone Tire & Rubber Co., New York City, declared a quarterly dividend of two per cent and an extra of one-third of one per cent on its preferred stock, in addition to the regular quarterly dividend of three per cent on its common stock, payable July 1, 1918. Subject to the approval of the stockholders at a special meeting called for the purpose, the company has also declared a stock dividend of 33½ per cent on the common stock, payable November 1 to stock of record October 11, 1918.

The Mason Tire & Rubber Co., Kent, Ohio, declared its seventh quarterly dividend of one and three-quarters per cent on preferred stock, payable July 1 to stock of record June 15, 1918. Stockbooks will close hereafter on the 15th of the month preceding date of dividend payment.

National Aniline & Chemical Co., New York City, declared a quarterly dividend and a deferred dividend of one and three-quarters per cent each on its preferred stock, payable July 1 on stock of record June 25, 1918.

The New Jersey Zinc Co., New York, declared an extra dividend of four per cent, payable June 10 to stock of record June 1, 1918.

The United Shoe Machinery Corp., Boston, Massachusetts, has declared a quarterly dividend of one and one-half per cent (37½ cents per share) on its preferred capital stock, and a dividend of two per cent (50 cents per share) besides an extra dividend of four per cent (one dollar per share) on its common capital stock, payable July 5 on stock of record June 18, 1918.

The Western Electric Co., New York City, declared its quarterly dividends on common and preferred stock, amounting to \$2.50 and one and one-half per cent, respectively, payable June 29 on stock of record June 22, 1918.

Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pennsylvania, declared its quarterly dividends of one and three-quarters per cent (87½ cents) on its common and preferred stock, payable July 31 and July 15, respectively, on stock of record June 29, 1918.

RUBBER COMPANY SHARE QUOTATIONS.

The following market quotations of shares of rubber manufacturing companies on June 25 are furnished by John Burnham & Co., 115 Broadway, New York City, and 41 South La Salle street, Chicago, Illinois:

	Bid.	Asked.
Ajax Rubber Co. (new).....	63	65
Firestone Tire & Rubber Co., common.....	89	91
Firestone Tire & Rubber Co., preferred.....	93	95
The B. F. Goodrich Co., common.....	44½	45½
The B. F. Goodrich Co., preferred.....	98	98½
Kelly-Springfield Tire Co., common.....	50	51
Kelly-Springfield Tire Co., preferred.....	80	87
Miller Rubber Co., common.....	99	101
Miller Rubber Co., preferred.....	90	92
Portage Rubber Co.....	99	102
Swinehart Tire & Rubber Co.....	50	65
United States Rubber Co., common.....	58	59
United States Rubber Co., preferred.....	103	103½

HODGMAN PLANT PROTECTED BY POLICE DOGS.

The Hodgman Rubber Co., Tuckahoe, New York, has been awarded a considerable volume of government business and has adopted a new departure in the manner of protecting its plant against violence. At the suggestion of the government authorities, trained police dogs are being used to supplement the activities of the regular watchmen. These dogs are very



HODGMAN POLICE DOGS.

intelligent, and devoted only to the men who accompany them, fiercely attacking and holding down any stranger. They have received special training and will be a decided acquisition to the force protecting the Hodgman plant. One of these dogs is quite young, as is evident in the picture, but it is already showing the results of training and the benefit from working with the older one which is a "regular" police dog.

E. I. DU PONT DE NEMOURS & CO.

E. I. du Pont de Nemours & Co., Wilmington, Delaware, in their annual report for 1917 show net receipts of \$49,258,661.58 as against \$82,107,692.55 for the corresponding period in 1916, while the surplus for the year is \$15,587,533.58, against \$19,598,820.55 for 1916, and the accumulated surplus to date is \$44,154,571.20 as against \$28,567,037.62 in 1916. The company states that a large part of the profits due to the military business of recent years has been reinvested in the expansion of the business, so that present profits should be measured in comparison to capital employed, exclusive of good will, of \$240,000,000 as against a total of \$51,500,000 prior to 1914. The company is cooperating with the Government in every way, even turning over drawings of machinery for a powder plant and permitting inspection of processes in its factories, as well as furnishing available data concerning the manufacture of military powders, etc., all without compensation, with a view to enabling the Government to provide for its needs as expeditiously as possible.

During 1917 an 18 per cent dividend on the common stock was authorized and in December a special distribution of 32 per cent, payable in Liberty bonds, was also made. In addition to the payment of 6 per cent dividends on the debenture stock, the common stockholders received a total of 51 per cent in dividends during the year.

Large subscriptions to the Liberty Loan bonds have been made, as well as to the Y. M. C. A. War Work Fund, while at the time of the first campaign for the benefit of the American Red Cross, the directors declared a special dividend of one per cent on the common stock, recommending that the stockholders devote the amount so received to the Red Cross Fund. The company has now declared another dividend of

two per cent, amounting to \$1,177,084, which was payable May 18, for the benefit of the second Red Cross drive.

The company owns the Harrison Works, Philadelphia, Pennsylvania, manufacturers of chemicals and rubber compounding ingredients; the Fairfield Rubber Co., Fairfield, Connecticut, manufacturer of carriage cloth, and the Du Pont Fabrikoid Co., 120 Broadway, New York City, which makes artificial leather.

OLD RUBBER STAMP FIRM SELLS PATENTS.

Lamb & Tilden, Inc., Washington, District of Columbia, manufacturers of the "All Rubber" and "Dove Tail Air Cushion" stamps, have sold the rubber stamp department, including patents and ink formulas, to Robert H. Hay, who will continue that line of business in a building adjoining Lamb & Tilden's under the name of the Hay Rubber Stamp Co. Mr. Hay is the publisher of "The Stamp Trade News," 826 Thirteenth street, N. W., Washington, D. C.

Richard L. Lamb, president of the firm of Lamb & Tilden, will continue the metal stamp, badge, die, and sign business as the Lamb Seal and Stencil Co., while Eugene M. Tilden, having sold his rights in the corporation to Mr. Lamb, will be the Pacific Coast representative through whom customers may obtain the rubber stamps and inks formerly made by Lamb & Tilden. His address will be Postoffice Box 78, Los Angeles, California.

L. A. SUBERS ACTIVE IN NEW CORPORATIONS.

During the last three months three new companies in which L. A. Subers, 1270 West Third street, Cleveland, Ohio, is more or less actively interested, have been organized for producing and handling articles of rubber or rubber compounds and for constructing rubber plants. These new concerns will replace the Subers Fabric & Rubber Co., Cleveland, Ohio, and the New Castle Rubber Co., New Castle, Pennsylvania, and are as follows: The American Rubber Products Co., Wyoming, Delaware; The Subers Rubber Products Co., a Delaware corporation, and The Power Rubber Co., Wyoming, Delaware. Details of incorporation are given under New Incorporations in this issue.

The officers of The American Rubber Products Co. are: F. E. Turrell, president, Detroit, Michigan; W. H. Grant, vice-president, New York City; H. Linndale Smith, secretary; F. H. Townsend, treasurer, and L. A. Subers, chairman of the board of directors, the latter three all of Cleveland, Ohio. The other directors are W. H. Schoen and Edward N. Ohl, both of Pittsburgh, Pennsylvania, and F. F. Gentsch, Cleveland, Ohio.

The officers of The Subers Rubber Products Co. are: L. A. Subers, president; Edward N. Ohl, vice-president; H. Linndale Smith, secretary, and F. H. Townsend, treasurer. The directors are F. E. Turrell, W. H. Grant, W. H. Schoen, and F. F. Gentsch.

ASSOCIATION OF AUTOMOTIVE EQUIPMENT SALESMEN.

Many associations have been formed from time to time for the benefit of the manufacturer, jobber and dealer. These organizations have also benefited the trade in general, but there has been needed for a long time an organization to benefit the man traveling on the road.

With the object of providing for the traveling man an association called Automotive Equipment Salesmen was formed last month by sales managers and salesmen in the automotive industries, and the following officers were elected:

B. G. Close, president, Champion Ignition Co.; M. A. Dewey, Jr., 1st vice-president, Jemco Manufacturing Co.; John Clarke, 2nd vice-president, A. J. Picard & Co.; Ralph Waldt, secretary, Weaver Manufacturing Co.; J. N. Kirk, Jr., treasurer, Thermoid Rubber Co.; C. J. Colling, general field secretary, Marvel Manufacturing Co.

The increasing number of applications for membership that are being received by the secretary augurs well for the future of the new organization.

NEW INCORPORATIONS.

The American Rubber Products Co., April 23 (Delaware), \$2,100,000 authorized capital stock; preferred stock par value \$100, and 29,000 shares common stock without nominal or par value. H. Linndale Smith, Frank H. Townsend, Frank F. Gentsch, all of Cleveland, Ohio. Principal office with Homer J. Smith, Wyoming, Delaware. To construct rubber plants and manufacture articles from rubber or rubber compounds.

Benton Garter Co., Inc., May 17 (New York), \$500. S. Levitas, 6215 20th avenue, Brooklyn, New York; A. E. Sawyer, 667 Briggs avenue, Queens, New York, and S. J. Plunkett, 440 East 182nd street, New York City. Principal office, New York City. To manufacture garters, arm-bands, etc.

Burlock Tire Corp., March 7 (New York), \$1,200. D. G. Griffin, L. E. Mahan and C. I. Johnson, all of 233 Broadway, New York City. To manufacture tires and rubber goods.

Chippewa Rubber Co., May 7 (Maine), \$250,000. C. T. L. Croteau, C. G. Trott, E. Connor, all of Portland, Maine. To deal in rubber goods of all kinds.

Columbia Tire Co., Inc., May 18 (New York), \$5,000. H. L. Sarachan, 198 Birr street; D. Goldman, 26 Gorham street, and I. Gordon, 5 Heman street—all in Rochester, New York. Principal office, Rochester, New York. To deal in tires.

The Dayton International Rubber Sales Co., November 9 (Ohio), \$10,000. A. L. Smith, T. W. Price and C. G. Vincent. Principal office, 137 East 3rd street, Dayton, Ohio.

The Embry-Rapier Co., May 13 (Kentucky), \$10,000. J. W. Embry, S. J. Rapier, S. J. Dant, all of Louisville, Kentucky. Principal office, Louisville, Kentucky. To buy and sell automobile tires and all accessories thereto.

The Essex Manufacturing Co., May 7 (Maine), \$1,000,000. C. T. L. Croteau, C. G. Trott, E. Connor, all of Portland, Maine. To deal in leather, wool, silk, rubber and cotton fabrics.

Exchange Tire and Rubber Co., Inc., May 1 (New York), \$2,000. A. Keene, G. Keene and A. Plaksin, all of 439 Manhattan avenue, New York City. To manufacture tires and rubber goods.

Firestone Steel Products Co., May 1, (Ohio), \$100,000. A. G. Partridge, H. U. Reading, H. H. Hollinger, T. F. Doyle and J. J. Shea, incorporators. To take over the rim end of the Firestone Tire & Rubber Co.

The Garhartt Tire Sales Corp., June 5 (New York), \$1,000. R. C. Garhartt, 3 Spruce Place; C. F. Myers, 116 Central avenue, and J. J. McCall, 100 State street, all of Albany, New York. To sell tires.

Globe Tire & Accessory Co., February 25 (Oklahoma), \$50,000. H. Thompson and T. A. Gibson, both of Oklahoma City, and R. J. Thompson, of Clinton, both in Oklahoma. Principal offices, Oklahoma City, Oklahoma. To engage in the wholesale and retail buying and selling of automobile tires, accessories, parts, repairs and any and all other business in connection therewith, not in violation of the laws of the State of Oklahoma.

Goodyear Rubber Co., April 17 (Pennsylvania), \$5,000. F. C. Gevin, T. A. Gevin, both of Philadelphia, and A. Bernstein, Wilkes-Barre, both in Pennsylvania. Principal office in Wilkes-Barre, Pennsylvania. To buy, manufacture and sell rubber boots, rubber shoes, rubberized clothing, rubber specialties and rubber goods of all and every description.

The Gotebo Tire & Accessory Co., March 9 (Oklahoma), \$10,000. R. L. Statler, J. M. Reeves, W. R. Patterson, and G. W. Martin, all of Gotebo, Oklahoma. To deal in, buy and sell automobile accessories, tires, etc.

Illinois Pen Co., April 22 (Illinois), \$50,000. J. and G. Kritikson and J. L. De Maria. To manufacture and deal in fountain pens. Organization not yet completed.

Liberty Sole & Tire Co., May 25 (Delaware), \$250,000. K. W. Brier, C. Un-ver-firth, and J. J. Crawford, all of 208 Bank

Building, Vincennes, Indiana. Principal office with the United States Corporation Co., 311 South State street, Dover, Delaware. To manufacture, buy, sell and trade in overtimes, fiber soles and a general line of rubber and compound goods.

Lomont & Co., March 12 (Indiana), \$75,000. C. J. and J. A. Lomont, J. A. Becker, and A. C. Gladieux, all of Fort Wayne, Indiana. Principal office, 129 East Columbia street, Fort Wayne, Indiana. To buy and sell at wholesale, tires, automobile supplies and accessories.

McGhee Rubber Co., May 7 (Texas), \$75,000. G. D. McGhee, B. F. Spence, and L. H. Coleman, all of Waco, Texas. To buy and sell goods, wares and merchandise of any description, wholesale and retail.

Maxotire Sales Corp., May 27 (New York), \$25,000. G. E. Hazard, R. C. Bradstreet, and W. E. Hazard, all of Rochester, New York. Principal office, 920 Granite Building, Rochester, New York. To act as New York distributor of Maxotires, made by the K. & W. Rubber Co., Denver, Colorado.

Naugatuck Tire & Rubber Co., Inc., March 18 (New York), \$10,000. M. Marcus, 201 West 120th street; D. Bernstein, 480 West 141st street, and L. Bernstein, 26 West 17th street—all of New York City. To manufacture tires.

New Jersey Tire & Rubber Co., May 17 (New Jersey), \$100,000. R. W. Martin, Newark, New Jersey, and L. S. Rosenblum, 2353 Washington avenue, and R. L. Noag, 200 West 94th street, both of New York City. To sell and distribute automobile tires, automobile accessories and supplies; to manufacture automobile accessories and supplies.

Norwood Tire Co., May 20 (New Jersey), \$2,000. D. H. and B. Peskowsky, all of Long Branch, New Jersey. Principal office, Brent Good Building, Long Branch, New Jersey. To deal in, sell, operate and let for hire, automobiles, motorcycles, and motor vehicles of every kind, nature and description.

Parsily & Lifshitz, Inc., May 28 (New York), \$25,000. I. E. Parsily, 602 Grand street, Brooklyn; S. L. Lifshitz, 32 Hart street, Bronx; H. Bloomgarden, 217 Vernon avenue, Brooklyn—all of New York City. To manufacture waterproof apparel.

Power Rubber Co., April 15 (Delaware), \$2,500. H. L. Smith, F. G. Carpenter, and F. H. Townsend, all of Cleveland, Ohio. Principal office with H. J. Smith, Wyoming, Delaware. To construct rubber plants for the manufacture of any article from rubber or any compound of rubber.

E. C. Preble Co., March 21 (Massachusetts), \$40,000. E. C. Preble, J. C. Waugh, W. H. Preble, all of 21 Belvidere street, Boston, Massachusetts. To manufacture, buy and sell leather, metal and rubber goods and specialties.

The Premier Rubber & Insulation Co., November 8, 1917 (Ohio), \$100,000 (\$60,000 common, \$40,000 preferred). A. Huetter, vice-president and general manager. Principal office, Dayton, Ohio.

Racine Tire Selling Agency, Inc., May 31 (New York), \$1,000. E. Storms, Jr., M. W. Storms, and E. Weber, all of 2 West 61st street, New York City. To deal in tires, etc.

Reliable Tire & Vulcanizing Co., January 12 (Illinois), \$5,000. E. G. A. L. and E. M. Peterson. Principal office, 811 East State street, Rockford, Illinois.

Ritz Tire Corp., June 7 (New York), \$1,000. J. T. Farran, 274 East 194th street, New York City, and A. Silver, 310 12th street, and H. G. Hamilton, 437 1st street, both in Brooklyn, New York. To deal in tires, etc.

Roberts Tire Co., Inc., April 16 (New York), \$25,000. E. S. Roberts, W. C. Monks. To distribute solid rubber truck tires and also pneumatic tires and to sell Goodyear, Kelly-Springfield and McGraw tires.

Rosenfield Raincoat Co., Inc., June 5 (New York City), \$100,000. H. Rosenfield, 170 West 74th street; C. Hollender, 961 St. Nicholas avenue, and H. Debrust, 220 Audubon avenue, all of New York City. To manufacture rubber and waterproof apparel.

Rubber Substitute Corporation of America, May 29 (Delaware), \$500,000. A. W. Britton, P. S. Smith, and W. A. Rogers, all of 65 Cedar street, New York City. Principal office with the United States Corporation Co., 311 South State street, Dover, Delaware. To acquire, sell, license and lease rubber made according to a certain patent.

St. Louis Tire & Rubber Co., April 24 (Illinois), \$1,000. C. P. Schwartz, D. W. Kahane and J. L. Golden, licensed as commissioners to open capital stock subscription books. Organization incomplete. Location, Chicago, Illinois.

Scattergood-Ralph Tire Co., April 26 (Delaware), \$25,000. F. R. Hansell, Philadelphia, Pennsylvania, and J. Vernon Pimm, and S. C. Seymour, both of Camden, New Jersey. Principal office with the Corporation Guarantee and Trust Co., Ford Building, Wilmington, Delaware. To manufacture, buy, sell, import, export and generally deal in tires for automobiles, bicycles and vehicles of all kinds and descriptions.

Service Automobile & Tire Co., March 11 (Oklahoma), \$100,000. W. H. Headrick, Blackwell, and G. Diamond and H. C. McQuaid, both of Oklahoma City—all in Oklahoma. To buy and sell, both at retail and wholesale, automobile tires and accessories of all kinds.

Simpson Auto Wheel Co. of Chicago, January 28 (Arizona), \$200,000. H. N. and S. J. Kent, H. J. Tofteness, A. Simpson and J. B. Ketter. Principal office is care of M. L. Stoddard, Central Building, Phoenix, Arizona.

Stronghold Tire Sales Co., Inc., May 2 (New York), \$10,000. I. Zivin, S. Zivin, both of 205 Ditmas avenue, and B. Agranoff, 1264 39th street, all in Brooklyn, New York. Tire selling.

The Subers Rubber Products Co., May 13 (Delaware), \$1,000,000 preferred stock; 10,000 shares common stock without nominal or par value. H. L. Smith, F. F. Gentsch, F. H. Townsend, all of Cleveland, Ohio. To construct rubber plants and to manufacture any article from rubber or any compound of rubber.

Sun Tire & Rubber Co., Inc., April 27 (New York), \$10,000. S. Bernheim, 35 Nassau street, New York, H. S. Hartstein, 250 Havemeyer street and C. A. Weldon, 591 Seventh street—both in Brooklyn, New York. Principal office, New York City. To manufacture tires.

Tire Distributors Corp., March 27 (New York), \$1,000. A. S. Carver, A. A. Hill and H. J. Strassberger—all of Buffalo, New York. Principal office, Buffalo, New York. To deal in tires, etc.

Tire Recruiting Machine Co., March 29 (Wisconsin), \$50,000. G. J. Thust, R. J. Thust and A. Thust. Principal office, Milwaukee, Wisconsin. To manufacture and sell machinery and rubber tires and automobile parts.

The Todd Rubber Co., December 17 (Connecticut), \$100,000. E. J. Todd, O. B. Todd, B. W. Bray, all of New Haven, and F. H. Potter, of Waterbury—both in Connecticut. Principal office, 442 State street, New Haven, Connecticut.

Tozier Rubber Manufacturing Co., April 26 (Illinois), \$400,000. E. B. Tozier, W. F. Sommers and W. C. Jordon, licensed as commissioners to open capital stock subscription books. Organization incomplete. Location, Chicago, Illinois. To manufacture and deal in rubber tires, casings and tubes.

United States Compression Inner Tube Co., May 14 (Delaware), \$1,000,000. A. W. Britton, S. B. Howard, L. H. Gunther, all of 65 Cedar street, New York City. Principal office, with the United States Corporation Co., 311 South State street, Dover, Delaware. To make, manufacture, create, and produce any and all kinds of rubber.

The Universal Tire Co., March 8 (Ohio), \$12,000. A. T. and O. Emmett, E. A. Roberts, M. R. Hatch, F. F. Gain. Principal office, 66 East Gay street, Columbus, Ohio. To buy and sell tires and tire accessories.

Universal Tire Stores Co., January 16 (Kansas), \$15,000. G. E. King, M. Leniger, J. L. Fox—all of Atchison, F. M. Hart, Nortonville, R. W. Conant, Junction City—all in Kansas. Principal office, Atchison, Atchison County, Kansas. To manufacture, sell, and repair automobiles or other motor-driven vehicles, tires, etc.

Viking Tire & Rubber Co., Inc., March 18 (New York), \$10,000. D. B. Parker, J. Barnett and J. M. Hetzer—all of 215 West 64th street, New York City. Principal office, New York City. To deal in rubber tires, etc.

Washington Tire & Vulcanizing Co., February 14 (Illinois). A. B. and L. E. Seelig and I. M. Amter. Principal office, 640 West Washington Boulevard, Chicago, Illinois. To buy, sell, lease, store and repair automobiles and motor vehicles of all descriptions, and their parts and accessories, and to manufacture repair and sell automobile tops and bodies, tires and other automobile parts.

RUBBER MEN ON M. & A. M. COMMITTEES.

Committee slate of the Motor and Accessory Manufacturers for the current year have been announced by the president, C. W. Stiger. Among them the names of E. H. Broadwell, vice-president of The Fisk Rubber Co., Chicopee Falls, Massachusetts, and of W. O. Rutherford, general sales manager of The B. F. Goodrich Co., Akron, Ohio, are prominent.

Mr. Broadwell is second vice-president of the association, a director, and a member of the executive, finance, show and al-lotment, banquet, membership and special investigations committees.

Mr. Rutherford is secretary and assistant treasurer of the association, a director and a member of the executive, finance, auditing, mobilization and special investigation committees; also representative to the Highway Industries Association.

NO CHANGE IN ZINC OXIDE PRICES.

The New Jersey Zinc Co., New York City, announces the following prices on American and French process zinc oxide for shipment on contract during the third quarter of this year.

AMERICAN PROCESS "HORSE HEAD" BRANDS.

	Carloads.	Less Carloads.
Special	10½c	11c
XX Red	10½c	10½c

FRENCH PROCESS "FLORENCE" BRANDS.

	Carloads.	Less Carloads.
White Seal	14c	14½c
Green Seal	13½c	13½c
Red Seal	13c	13½c

These prices are based upon shipment in barrels and are f. o. b. shipping point.

Contracts will be written at carload prices when at least a total of 20 tons of all grades is taken during the three-months period. The prices are subject to change without notice.

ADDS A SEVENTEENTH BUILDING.

The British-American Manufacturing Co., Inc., of Springdale, Connecticut, having completed a new building, which will practically double its output of proofed fabrics, celebrated the occasion on June 1 by giving a field day for its employes, and inviting many friends and business associates of the management to participate. A beautiful American Flag was raised over the new building, with appropriate music and much cheering, followed by sports and contests, a ball game and a tennis match. A band concert, refreshments, motion pictures and vaudeville succeeded and patriotic addresses were delivered by E. A. Brinkerhoff, president; L. C. Himebaugh, general manager; Thomas Coughlin, Jr., sales manager, and others, after which the guests danced. The company is making material for gas masks and rubberized cloth for soldiers' raincoats, its entire production being taken by the United States Government. The new building was erected in six weeks. A large amount of machinery has already been installed and the remainder is in transit.

THE SECOND PONTIANAK CASE.

During the hearings of the second Pontianak case, held in Boston and New York, the following witnesses for both the Government and the importers appeared and were cross-examined, all of them more or less closely connected with the rubber industry: William E. Bruyn, representing L. Littlejohn & Co.; Thomas A. Desmond and Francis R. Henderson, importers; James J. Clifford, president of the Plymouth Rubber Co. and formerly connected with the Boston Woven Hose & Rubber Co.; Harry A. Bell, of the Revere Rubber Co.; George Ellinwood, chief chemist of the Boston Belting Co.; Nelson E. Tousley, chief chemist of the Hood Rubber Co.; Raleigh B. Adams, superintendent of the Boston Belting Co.; Edward H. Scribner, factory manager of the Revere Rubber Co.; Frederick J. Maywald and Lothar E. Weber, consulting chemists. The testimony of all was substantially the same as at the first hearing, namely, that Pontianak, or gutta jelutong, is used as rubber and is in fact rubber.

WESTINGHOUSE REELECTS DIRECTORS.

The Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pennsylvania, at its annual stockholders' meeting held on June 12, 1918, reelected for a term of four years the following four directors: A. G. Becker, president of A. G. Becker & Co., Chicago, Illinois; William McConway, president of the McConway & Torley Co., Pittsburgh, Pennsylvania; George M. Verity, president of the American Rolling Mill Co., Middletown, Ohio; and Jerome J. Hanauer, of Kuhn, Loeb & Co., New York City.

STERLING TIRE CORP. INSURES WORKERS.

Following the example of many other industrial companies, the Sterling Tire Corp., Rutherford, New Jersey, has arranged to give an insurance policy to every employee who had been with the company more than a year on May 1, 1918. The amount of insurance given a worker who had been with the company less than two years on that date was \$600; two years, \$700; three years, \$800; four years, \$900; five years or over, \$1,000. No medical examination is required and the expense of maintaining the policy is paid by the company, free of cost to the employee. The company believes this will act as an incentive to workers to remain in its employ.

CHANGES AT NEW JERSEY ZINC CO.

H. G. Clopper, general sales manager of the New Jersey Zinc Co., New York City, announces the following changes in the organization: L. D. Williams has been appointed sales manager. Bushnell Bigelow has been appointed manager of eastern sales, succeeding to the duties of A. H. Peck, resigned. F. C. Fuller has been appointed manager of export sales.

GOODYEAR RUBBER CO. TO PAY ENLISTED EMPLOYEES.

The Goodyear Rubber Co., New York City, announces that it has concluded that it is just to the men who have joined the colors not only to keep their positions open, but, in addition, to give them an amount equal to fifty per cent of the wages that they received, these amounts to be paid direct, or to dependents, as each may elect; this to date from the day of joining the colors.

In case of factory employees who received pay on a piece-work basis, fifty per cent of their weekly earnings will be considered a fair average.

This decision is to be communicated at once to those who have left the employ of the company to enter the service, and to those now in its employ who are subject to call or who may enlist.

This ruling applies to all the stores and factories of the company.

J. C. WESTON.

JOSEPH CLARK WESTON, who was recently elected vice-president of the United States Tire Co., New York City, is known in the automobile business from one end of the country to the other. For twenty-two years he has been prominent in

the tire industry, though even before entering this field he had risen to the treasurership of the first firm he worked with, the drug and chemical house of E. H. Sargent & Co.

His first connection with the rubber business was as salesman for Morgan & Wright, in 1896, and after being promoted to general salesman in the Chicago territory, he was made manager of sales, and later secretary of the company.

When Morgan & Wright consolidated with three other

concerns to form the United States Tire Co., in 1911, Mr. Weston was appointed western district manager, and in 1912 was made central district manager. During the protracted visit of J. D. Anderson, the general sales manager, to Europe, Mr. Weston acted in his stead and in 1914, when Mr. Anderson resigned, succeeded him. In 1916 he was made director of sales, an office which he still holds in addition to his new position as vice-president.

Mr. Weston is a native of Kalamazoo, Michigan, and received his education there and at private schools in Texas and Chicago. He is a member of several Masonic bodies, of the Lotus and New York Athletic clubs of New York City, and the Athletic and Boat clubs of Detroit, Michigan.

NATIONAL ASSOCIATION OF WASTE MATERIAL DEALERS.

AT the regular quarterly meeting of the National Association of Waste Material Dealers, held at the Hotel Astor, New York City, June 18 and 19, action was taken toward maintaining adequate supplies of waste materials so that government and civilian requirements of these essential materials shall be assured.

Full attendance and active participation featured the general and divisional meetings and were indicative of the constantly growing interest in association matters.

SCRAP RUBBER DIVISION MEETING.

David Feinburg, the new chairman, presided at the rubber scrap division meeting that was held on June 18, the principal business transacted being the modification of packing standards.

It was voted that the new packing classification, for the year beginning July 1, 1918, include a separate grade to be called "Jet Black Tires and Peelings," but that the charge of one-half cent, as provided for in the circular to cover cost of sorting and rebaling rejections of this new grade, be waived by reclaimers from July 1 to October 1, 1918, the latter provision, however, not to be embodied in the circular.



J. C. WESTON.

PERSONAL MENTION.

D. A. HAWKINS, manager of the New York branch of the United States Rubber Co., has held that position since 1910, when the consolidation of the Amsterdam Rubber Co., the Merchants Rubber Co. and the Hub-Mark Rubber Co., New York selling agencies of U. S. Rubber Co. goods, took place.



D. A. HAWKINS.

he was promoted to the position of superintendent, and in 1906 was elected president.

D. Y. Husselman, who was formerly office manager of the New York branch of the Kelly-Springfield Tire Co., Trenton, New Jersey, is now in charge of the sales promotion work for that branch.

Elmer E. Caldwell has been appointed assistant advertising manager for the Ajax Rubber Co., Inc., Broadway and 58th street, New York City.

Seneca G. Lewis, general manager of the Pennsylvania Rubber Co., Jeannette, Pennsylvania, attended the recent hardware convention at Atlantic City, New Jersey, where he participated in the Dupont Trapshooting School tournament on Young's Pier. He won the trophy for the best score, having 22 breaks out of 25, although he had not previously practiced shooting for nearly eight years.

M. B. Salisbury, the newly-elected president of W. H. Salisbury & Co., Inc., manufacturers of leather and rubber belting and rubber goods, 308 West Madison street, Chicago, Illinois, was born in the middle '70's, of sturdy New England stock, and is the son of William H. Salisbury, the founder of the business.

As a member of the board of directors of the company for a number of years, Mr. Salisbury has steadily followed the fair and honorable policy of his father which has carried the company through a career of over sixty years as the oldest belting and general mechanical rubber goods house in the Central West.

Thomas J. Johnson, formerly sales manager of the Pickett Puncture-Proof Tire Co., has been appointed manager of the branch of the Sterling Tire Corp., Rutherford, New Jersey, located at 2824 Locust street, St. Louis Missouri.

B. C. Swinehart has been appointed manager of the motor truck department of the Hewitt Rubber Co., Buffalo, New York. For the last eight and one-half years he was with the Republic Rubber Co., Youngstown, and for six years prior to that with the Swinehart Tire & Rubber Co., of Akron, both in Ohio.

L. I. Seaman has been placed in charge of the eastern district of the Knight Tire & Rubber Co., Canton, Ohio, with headquarters at 215 West 51st street, New York City.

E. C. Gavin, for the last nine years superintendent of the Chicago Rubber Clothing Co., Racine, Wisconsin, has resigned to assume the management of the Chippewa Rubber Co., Eau Claire, Wisconsin, of which he is vice-president. E. C. Gavin, Jr., will take charge of the spreading department and assist his father with the management of the plant. He has been with the Chicago Rubber Clothing Co. for the last two years.

W. H. Peters has succeeded E. C. Gavin as superintendent of the Chicago Rubber Clothing Co., Racine, Wisconsin. He has been for the last seven years assistant superintendent of the Gutta Percha & Rubber Manufacturing Co., 126 Duane street, New York City.

At Flushing, Long Island, New York, on April 20, 1918, Miss Doris Barker, daughter of William E. Barker of the United States Rubber Co., was married to George Everett Lewis, Jr.

W. S. Bloomer has been appointed Kansas City manager of the mechanical goods division of the Republic Rubber Corp., Youngstown, Ohio, with headquarters at 1827 McGee street, Kansas City, Missouri. He will have charge of the sale of Republic rubber goods in the adjacent territory.

John W. St. Clair has been appointed factory manager of the Dry Climate Tire Manufacturing Co., Arvada, Colorado.

M. Klein has been appointed assistant advertising manager of the Racine Rubber Co., Racine, Wisconsin, succeeding J. V. Gilmour, who has been called to the colors. Mr. Klein will work directly under C. R. Collins, advertising manager for both the Ajax Rubber Co., Inc., and the Racine Rubber Co.



W. S. BLOOMER.

Henry D. Miles, president of the Buffalo Foundry & Machine Co., Buffalo, New York, has been elected president of the Buffalo Chamber of Commerce, to succeed Archer A. Landon, who has been designated by President Wilson as first assistant of aircraft construction.

Oren M. Ragsdale has been elected secretary and treasurer of the Hunter Dry Kiln Co., 26th street and Cornell avenue, Indianapolis, Indiana. He is an ex-president of the Indianapolis Stock Exchange, of which his firm is a member, and for the last year has had charge of the sales department of the company.

Walter Bauer, vice-president of the American Chicle Co., 19 West 44th street, New York City, has been elected president of the Pyrene Manufacturing Co., 52 Vanderbilt avenue, New York City.



M. B. SALISBURY.

A. Huettner, formerly superintendent of the Boonton Rubber Manufacturing Co., Boonton, New Jersey, and for the last two years head of the Bakelite department of the Dayton Engineering Laboratories Co., Dayton, Ohio, resigned from the latter position on April 1, 1918, to accept the position of vice-president and general manager of the Premier Rubber & Insulation Co., Dayton, Ohio, of which he is the founder. The factory is located in North Dayton. It was completed April 1 and has been in operation since May 1, 1918. Its chief products of hard rubber are battery jars and covers, distributors, and other rubber insulation used in the manufacture of airplanes and automobiles. Molded insulation of all kinds is being produced in the Bakelite department.



A. HUETTER.

TRADE NOTES.

The Carlisle Tire & Rubber Co., Carlisle, Pennsylvania, is manufacturing automobile inner tubes at the rate of approximately 600 a day.

The Pequannoc Rubber Co., Butler, New Jersey, has increased its capital from \$250,000 to \$750,000. Of this, \$500,000 is common and \$250,000 preferred stock. This plant has a daily capacity of 50 tons of reclaimed rubber.

The Pioneer Shoe & Rubber Co., 27 North Third street, Minneapolis, Minnesota, was awarded a supplementary requisition a short time ago, to apply on its order from the Government last January to supply rubber overshoes. This company is distributor in the Northwest for the Hood Rubber Co., Watertown, Massachusetts. Gerald Gunnerson is treasurer.

The International Rubber Co., Denver, Colorado, has changed its name to the Gates Rubber Co. This has been done in pursuance of the policy of the company to identify itself in the mind of the public with the Gates half-sole tires, which it manufactures. The management remains unchanged.

The Vulcan Proofing Co., 583 Dean street, Brooklyn, New York, is building an addition to its plant, situated on First avenue between 57th and 58th streets, which it expects to occupy soon after July 1. The building will measure 130 by 308 feet, and cost about \$600,000.

Otto Isenstein & Co., 10 Hubert street, New York City, crude rubber importers, announce that, by authority of the Supreme Court, Otto Isenstein has changed his name to O. G. Innes, and that the corporation has changed its name to Innes & Co., Inc. The ownership and management will remain the same.

Hand & Sullivan, 10th street and Tacoma avenue, Tacoma, Washington, have opened a tire and service station at the above address. The members of the firm were formerly branch and store managers in Tacoma for The Fisk Rubber Co., Chicopee Falls, Massachusetts.

The Portland Tire & Truck Co., 71 Broadway, Portland, Oregon, has taken over in that city the business of the Republic Rubber Co., Youngstown, Ohio, and will distribute Republic pneumatic and solid tires in the State of Oregon.

The Akron Tire Corp., Crescent street and Bond avenue, Grand Rapids, Michigan, carries about \$200,000 worth of tires in the two-story building which it owns at that address. It also maintains a chain of stores. It handles blemished firsts and first quality tires of all standard makes. W. J. Large is manager.

The Embry-Rapier Tire Co., 908 South Third street, Louisville, Kentucky, is state distributor of Perfection tires for the Perfection Tire & Rubber Co., Fort Madison, Iowa. This concern has recently incorporated under the laws of Kentucky, with capital stock of \$10,000, all of which is subscribed for. The officers are: Jesse W. Embry, president; Samuel J. Dant, vice-president, and Sylvanus J. Rapier, secretary-treasurer.

The Miami Vulcanizing & Rubber Co., southwest corner of Eighth street and Broadway, Cincinnati, Ohio, has recently increased its capital to \$50,000, thus doubling it. It states this was made necessary by the volume of business it is doing on Miller tires which it distributes.

The Link-Belt Co., Indianapolis, Indiana, is building a three-story addition about 105 by 110 feet, to be used as a machine shop. This is an extension to the manufacturing building at its Ewart plant.

Thomas E. Wilson & Co., 701 North Sangamon street, Chicago, Illinois, sporting goods dealers, have opened a wholesale store in New York City in the Central Building, 25 West 45th street. It recently featured in its window the ball used in its new game known as cage ball, which was described in the New Goods department in our issue dated June 1, 1918.

The Chicago Tire Goods Co., 1216 Webster avenue, Chicago, Illinois, has increased its capital from \$10,000 to \$50,000. The officers are: William Lanahan, president, and C. B. Lanahan, secretary.

Jacob Hyman, 111 East Market street, Louisville, Kentucky, wholesale dealer in waste materials and scrap rubber, has recently purchased the building at 119 East Market street, adjoining its present rubber stock warehouse. It will be used for storage purposes.

Ground has been broken for a new addition to the mill of the Manhasset Manufacturing Co., Putnam, Connecticut, manufacturer of automobile tire fabrics. The addition is to be 60 by 60 feet, two stories in height. It will be of brick, similar in style and construction to the present mill. Six tenement houses have also been contracted for.

Canadian Graton & Knight, Limited, has been incorporated at 84 St. Antoine street, Montreal, Quebec, Canada, in order to facilitate the handling of Canadian trade. The home office and factory are at Worcester, Massachusetts, U. S. A., where the well-known Graton & Knight belts and specialties have been manufactured since 1851. The Canadian branch states that the charter of the new incorporation permits it to deal in rubber belting, but that it does not anticipate doing so at present.

LA CROSSE RUBBER MILLS CO. INCREASES CAPITAL.

The La Crosse Rubber Mills Co., La Crosse, Wisconsin, has increased its capital stock from \$500,000 to \$1,000,000 and is employing 1,000 workmen. It expects soon to increase the number to 1,500. About four years ago the Funk brothers took charge of the business and converted the principal line from clothing to footwear. The "Craftsman" shoe for workmen is featured, being of brown duck with red rubber soles and leather insoles. The officers of the company are: Albert Hirshheimer, president; M. Funk, vice-president; A. P. Funk, secretary and general manager; A. S. Funk, treasurer and assistant manager. The company is planning to build a large fireproof power plant and additions to its concrete building in the near future.

ANNUAL ELECTION CROMPTON & KNOWLES LOOM WORKS.

The Crompton & Knowles Loom Works, Worcester, Massachusetts, elected the following officers at its annual meeting: Lucius J. Knowles, president; Earl E. Howard, Frederic W. Howe, John F. Tinsley and Irving H. Verry, vice-presidents; Edward F. Green, treasurer; Fred J. Bowen, assistant treasurer; Thomas F. Booth, Fred J. Bowen, George Crompton, Homer Gage, Albert A. Gordon, Jr., Edward F. Green, Earl E. Howard, Frederic W. Howe, Arthur K. Hutchins, Charles F. Hutchins, Charles H. Hutchins, George F. Hutchins, Lawrence B. Jenckes, Frank P. Knowles, Lucius J. Knowles, Henry H. Merriam, John B. Syme, Charles M. Thayer, John F. Tinsley, Irving H. Verry and George E. Warren, directors; Frank T. Scott, auditor; Thomas T. Booth, purchasing agent; Philip B. Heywood and Frank E. Colesworthy, assistant purchasing agents; Frank E. Stimpson, cashier.

THE AIRPLANE POSTAL SERVICE.

Regular airplane postal service between New York, Philadelphia and Washington has been established and a time-table announced for the benefit of patrons. The earliest time when mail must reach a postal station in New York City is 8.06 a. m. at the Tremont station, and the latest times when mail will be accepted are 10.50 a. m. at the General Postoffice, 10.55 a. m. at the Grand Central station, and 11.15 at the Pennsylvania terminal. Letters mailed from New York will ordinarily reach the addressees at approximately 2.30 p. m. in Philadelphia and at 4 p. m. in Washington.

THE RUBBER TRADE IN AKRON.

By Our Regular Correspondent.

VOLUNTEERS for special work in the repair departments of the United States Army are being trained in Akron rubber factories in order that they may qualify as tire repair experts for service in France. Lectures on the theory and practice of repair work and rubber work in general are given at the Municipal University by professors and men skilled in the rubber trade. The lectures are illustrated by motion pictures and lantern slides showing the different processes in the manufacture and repair of rubber goods. Following the lectures the men are taken to the rubber factories where they are put to work at benches beside skilled mechanics. They are taught the practical side of rubber working first hand, the companies readily cooperating by assigning skilled men to aid in the work.

A high grade of volunteers is being secured by the various draft boards which are enlisting men for training. Many are professional men and the majority of them are college graduates. They take readily to the work, and the intensive training to fit them for it usually requires about one month. It is expected that these tire repair experts will save thousands of dollars' worth of tires each month when they arrive in France. Reports from behind the fighting line are that there is a great wastage of tires now, due to lack of skilled workers, and that the arrival of trained rubber workers will turn this loss into an asset for the Allied armies.

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One of the largest celebrations Akron has ever seen has been planned for Americanization Day, July 4, when 500 mixed voices will participate in a great community chorus which will sing selections familiar to everybody. The glee clubs from the big rubber plants here are being pressed into service, and the rubber workers are being solicited to take part. H. T. Waller, of The B. F. Goodrich Co., is in charge of the program, and has been working hard to secure speakers and make the affair a success. The huge assembly will be directed by Professor A. M. Morgan, director of the Goodrich Glee Club, who was chosen for the work at a meeting of the representatives of more than a dozen Akron choirs and glee clubs.

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The rubber companies of Summit county were responsible for the mighty showing made in the Summit County War Chest drive at which \$2,500,000 for war work purposes was raised. The different companies had well-organized teams which solicited the workers in the factories, each man and woman being asked to give one hour's pay each week to the war chest. Two per cent of the income of each worker was the usual ratio of payment to the war chest, and the big rubber magnates conscientiously figured their pro rata assessment, although in some cases subscriptions as high as \$30,000 were received from families as the result of this conscientious giving. All the companies exceeded their quotas.

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Having played no small part in the Liberty Loan campaigns in New York, Cleveland, Toledo and elsewhere, the big 50 by 75-foot Goodrich American flag has been sent to Oklahoma City, where it was borne in a War Chest parade. It is booked for St. Louis and other cities later.

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Charles B. Raymond, vice-president of The B. F. Goodrich Co., was awarded the honorary degree of Master of Arts at Amherst College, Amherst, Massachusetts, at its recent 97th commencement exercises.

Mr. Raymond has been administrator of many public trusts. He is a director of the First National Bank of Akron. He is trustee of Kenyon College, senior warden of St. Paul's Episcopal Church, president of the board of trustees of the Akron

City Hospital, president of the board of trustees of the Young Women's Christian Association, a member of the Summit County War Council, and for the past six years has been chairman of the water committee of the Akron Chamber of Commerce, having in charge the building of the new \$5,000,000 municipal water plant.

F. C. Van Cleef, the new secretary and director of The B. F. Goodrich Co., will be remembered in connection with the suit brought in 1914 in the United States Courts at Cleveland, Ohio, by the Automobile Cooperative Association of America against the Goodrich company and several other manufacturers, based on the claim that the association had suffered financial loss because the rubber companies would not sell tires to it at wholesale prices. The association lost the case. At that time Mr. Van Cleef was connected with the Cleveland law firm of Hoyt, Dustin, Kelley, McKeehan and Andrews, counsel for the Goodrich company, and gathered the evidence and prepared the case for trial. The result was his appointment as counsel to the company in Akron in November, 1916, since which time he has had charge of the legal department. He is a graduate of Oberlin College and Columbia University Law School.



F. C. VAN CLEEF.



H. HOUGH.

H. Hough, the controller and one of the new directors of The B. F. Goodrich Co., was formerly a member of the well-known New York accounting firm of Lovejoy, Mather & Hough. For the last seven years he has had complete charge of auditing the books of the Goodrich company, making trips from New York for the purpose.

In the recent triangular track and field meet participated in by athletes of the Goodrich, Firestone and Goodyear factories, the Goodrich cinder path and weight men won for the second time. The score was: Goodrich, 92½; Goodyear, 33, and Firestone, 18½. The accompanying picture shows the Goodrich track team. Reading from left to right, the personnel is as fol-



lows: O'Meara, manager; Foster, colored star; Davies, Pickett, Filley, Cummings, Fellers, Seeds, Saltzman, Herold, Allison, Gressing and Edward Connelly, athletic director.

The B. F. Goodrich Rubber Co. announces the following changes in its organization: C. Williams, former branch manager at Sioux Falls, South Dakota, promoted to a similar position at Fargo, North Dakota, his home; succeeded by G. W. Tappan in Sioux Falls. H. S. Krimmel appointed head of the truck tire department of the Boston, Massachusetts, branch; formerly Goodrich tire expert in Washington, District of Columbia. George E. Fritz appointed manager of Goodrich branch at Grand Rapids, Michigan, succeeding H. L. Gwatkin, who has entered business for himself at Muskegon, Michigan.

Americanization of workers speaking foreign tongues is being given much attention by Akron rubber companies, who are trying to teach their employes American principles and ideals through the study of the English language. Two years ago The B. F. Goodrich Co. Bureau of Education established classes in English for foreign employees. In the last year 1,500 employes were enrolled in the Goodrich school for coming Americans, and 900 of this number were given a working knowledge of English. Elementary English classes are held five days a week, at times to suit the convenience of workers on all shifts. Besides English and arithmetic, the Goodrich school has classes in French, commercial correspondence, advanced arithmetic, mechanical drawing and drafting. The classes are open to all Goodrich employes. H. T. Waller is supervisor of the Bureau of Education.

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The Firestone Tire & Rubber Co. has opened a factory branch at Minot, North Dakota, and another at Nashville, Tennessee.

The appointment of S. D. Wonders to the position of assistant office manager has been announced by the Firestone Tire & Rubber Co. Mr. Wonders has been connected for more than two years with the Firestone company in the manufacturing, accounting, auditing and industrial engineering departments, and the experience gained in these positions is responsible for his promotion.

Edward S. Babcox, advertising manager of the Firestone Tire & Rubber Co., was elected president of the Audit Bureau of Circulation at a recent meeting of that organization in Chicago, Illinois. This organization is composed of publishers and advertisers whose purpose it is to acquaint advertisers with the circulation statistics of periodicals and newspapers.

Robert E. Lee, of the Firestone Tire & Rubber Co., has been named by Governor Cox as a member of the Ohio State Old Age and Health Commission. He will succeed D. R. Kennedy, of Youngstown, who resigned to take up industrial relations work with the National Ship Building Commission.

Allings DeForest, one of the foremost landscape architects of the country, will soon be called to the colors to design model army cantonments. He has been completing the development of H. S. Firestone's estate. Four years ago he designed Firestone Park, and it now stands as a monument to his work in Akron.

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The Guardian Savings & Trust Co., of Cleveland, Ohio, on June 1 was appointed transfer agent and registrar of the preferred and common stock of The Mason Tire & Rubber Co., Kent.

Flag Day, June 14, was celebrated at the plant of The Mason Tire & Rubber Co. by raising a large new national flag and a service flag containing 50 stars. Appropriate selections were rendered by the band, followed by an address by Rev. J. H. Hull, the singing of "The Star-Spangled Banner" by the assembled employes, and the repetition of the pledge of allegiance.

D. N. Mason has been elected vice-president of The Mason Tire & Rubber Co., Kent.

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B. C. Wilson has been appointed head of the advertising department of The Miller Rubber Co. He was associated with Martin-Kelley, Toledo, Ohio, for a number of years.

The firm of Stewart & Harper, wholesale distributors for The Miller Rubber Co., Pittsburgh, Pennsylvania, having been dissolved, the rubber company has established a direct factory branch in that city, located at 5968 Baum Boulevard. It will be under the management of S. S. Stewart, of the late firm of Stewart & Harper.

The Miller Rubber Co. has also opened a factory branch in Oklahoma City, Oklahoma, which will take care of the western part of Arkansas and the Texas Pan Handle as well as Okla-

homa. It is in charge of John Watt and R. D. Albright. The former was with the Goodrich company for eight years, and opened the United States Tire Co.'s branch in Oklahoma City, which he operated as manager for four years. Mr. Albright was four years with The Goodyear Tire & Rubber Co., and one with the United States Tire Co. Both men resigned from the United States company in order to take their new positions with the Miller organization.

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The Marathon Tire & Rubber Co., Cuyahoga Falls, has appointed William J. Greene in charge of sales in the department of soles, heels, belts and specialties. He was formerly with the Vul-Tex Co., Barberton.

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The L. H. Kendall Tire & Rubber Co. will locate at Massillon, Ohio, where the company has purchased the plant of the Meyer Rubber Co., and active operations will be commenced soon. The factory is now being remodeled at a cost of \$50,000. Akron, Cleveland and Pittsburgh capital is interested in the concern, which was incorporated in 1916 for \$500,000. The company first purchased land at Cuyahoga Falls, but on account of the scarcity of labor and building material, contracts were canceled. The officers of the company are: L. H. Kendall, president; F. H. Kelsey, secretary, and A. M. George, treasurer.

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Albert C. Hartman, of Cleveland, has been made special representative for pneumatic truck tires for The Goodyear Tire & Rubber Co. He has been in the tire business for eighteen years, and for the past six years has been with the Hartman Tire & Repair Co., of Cleveland.

Turned down thirteen different times when he applied for enlistment, Charles W. Seiberling, Jr., finally entered the service last month, when he was accepted in Headquarters Company, 332d Infantry, as a private at Camp Sherman, Chillicothe, Ohio. Mr. Seiberling was in the Orient when the war broke out. He hurried back to his native country to answer the call, but was repeatedly turned down, owing to slight physical defects. He then took up Y. M. C. A. work at Camp Sherman and did so well that he was finally accepted.

The Goodyear Tire & Rubber Company shows free moving pictures twice weekly at Seiberling Field, including the best of the latest comedies. At the first show six reels were run, including pictures of the Goodyear cotton plantations, that are located at Goodyear, Arizona.

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Raymond S. Rudy, adjuster for The Miller Rubber Co., and Miss Florence L. Conklin were married May 23, 1918.

James Q. Goudie, formerly connected with the Diamond Rubber Co., Akron, and now central district manager of the Pennsylvania Rubber Co., Jeannette, Pennsylvania, and Miss Marian Churchill were married in Cleveland, Ohio, June 4, 1918. They will live in Detroit, Michigan.

Joseph Howard Dunlap, assistant experimental engineer for The Goodyear Tire & Rubber Co., and Miss Virginia Belle Walker, were married in Akron, June 8, 1918. Arthur F. Pond, of the Toronto, Ontario, branch of the Goodyear company, was one of the ushers.

Miss Ione Robison, private secretary of A. D. Housley, of The B. F. Goodrich Co., was recently married to Sergeant Carl Abbott, of Camp Sherman, Chillicothe, shortly before he sailed for France.

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Albert T. Holt, one of the pioneer superintendents of the rubber trade, is at his home in Columbus, Ohio, convalescing from the effects of a broken leg. The accident occurred through a fall in a factory that he was examining.

THE RUBBER TRADE IN BOSTON.

By Our Regular Correspondent.

THE E. H. Clapp Rubber Co., of this city, has passed its fiftieth anniversary, a fact brought to the notice of the trade by a modest steel-engraved "greeting" sent out by this pioneer reclaiming concern. The history of this house is interesting. The late Eugene H. Clapp, half a century ago, started a little factory on the Back Bay, in Boston, near where Massachusetts avenue crosses the Boston & Albany railroad, and engaged in grinding rubber boots and shoes, and rubber car springs, removing the fiber by a secret process. Hitherto such pulverized rubber was used only for making the cheapest grades of packing. Mr. Clapp believed that if the rubber were free of fiber it could be used for many other articles. After much experimenting he hit upon the simple plan of separating the fiber from the rubber by means of an air-blast and, keeping the process a secret, and watching the factory day and night, he was able to outdistance all competitors. However, the secret gradually became public property. Mr. Clapp invented other processes for the reclamation of rubber, and these, too, were at first held as trade secrets. Later, the acid process, invented in Europe, came into use in this country. The factory in Boston was outgrown, and a larger one built at Hanover, Massachusetts. As business grew it was greatly enlarged, and is to-day probably ten times as large as it was in the early nineties.

Associated with Mr. Clapp was his brother, A. W. Clapp, and later, Eugene H. Clapp, Jr., and G. A. Clapp, the sons of the founder. Eugene H. Clapp died in 1892, and soon after, the E. H. Clapp Rubber Co. was formed to continue the business. A. W. Clapp, who was elected treasurer, died in April, 1907. The present officers of the company are G. A. Clapp, president; John S. Clapp, vice-president, and E. H. Clapp, secretary and treasurer. H. P. Fuller has charge of the sales department and J. A. Kendall is western representative, with headquarters at Akron, Ohio. The company may well be proud of its long and successful history, its standing in the trade, the popularity of its product, and the prospect of rounding out a complete century in the rubber reclaiming business.

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The firm of Willett, Sears & Co., of this city, which recently purchased a controlling interest in the Boston Belting Co., has now acquired title to the majority stock of the Plymouth Rubber Co., Canton and Boston, Massachusetts, manufacturers of proofed fabrics, artificial leather, rubber heels and rubber and fiber soles. A reorganization is being effected, but is not yet so definitely settled as to be announced here. Mr. Clifford will probably be given a new position, with an office at the Boston headquarters, 100 Summer street, and Mr. Stone will also return to Boston, probably retaining his present position as treasurer. Mr. Adams will have charge of the factory.

* * *

New machinery is being added to the Boston Belting Co.'s plant, which is being rearranged and brought to increased efficiency under the new management.

* * *

On June 18 the manufacturers of calendered rubber surface clothing held a meeting in Boston, at which every manufacturer of these goods in the United States was represented. The meeting was called by N. Lincoln Greene, chairman of the clothing division of the War Service Committee of the Rubber Industry, who presided. Arrangements were made to formulate recommendations for the conduct of this branch of the business along lines of conservation. Another meeting will be held soon, the final decisions of which will be forwarded to Washington. This branch of the business is entirely separate from the double texture raincoat business, action having been taken on this latter branch earlier in the season, although the recommendations regarding these double-faced lines were not made public until last month.

The factory of the Hood Rubber Co. in East Watertown is so situated that a large proportion of the employees use the street cars in getting to and from the plant. Because of the congestion during the rush hours, between 7 and 8.30 a. m. and 4 to 6 p. m., the railway company has installed a loop at the nearest point to the factory, where extra cars can be kept available. The company is at present employing 7,700 persons, and is advertising for more help in every Boston daily and Sunday paper, offering good wages to experienced workers, a chance to learn footwear making to those who wish such an opportunity, and pay while learning.

The Hood Rubber Co., Watertown, is now shipping tires to distant points by motor trucks. The first truck left Watertown on May 21 for Philadelphia, Pennsylvania, and is now running between that city and Washington, District of Columbia.

Thomas F. Kimball, of the sales department of the Hood Rubber Co., has been appointed by the citizens of Belmont, Massachusetts, as chairman of the committee to arrange for a community celebration on July 4, in accordance with the request of the Committee of National Defense that every community observe Independence Day in a fitting manner.

Norman F. Stevens, formerly of the drafting room of the Hood Rubber Co., who is at his home in Maine, awaiting call to the aviation service, has completed designs for a new airplane engine, which he claims will reduce weight considerably per horse-power developed, over that of the present type of engines. This is the result of several years' study and experiment. The design is said to be favorably considered by the professors of the aeronautical motor department of the Massachusetts Institute of Technology, and the plans will be brought to the attention of the proper authorities in Washington.

* * *

A fire which occurred not long ago at the plant of the Converse Rubber Shoe Co., Malden, has in it a lesson on fire-fighting in rubber factories. The fire was believed to have been started by spontaneous combustion, and the 500-gallon cement mixer, where it originated, was almost instantly a mass of flames. The fire crew of the plant turned water on to extinguish the flames, and the burning solvent floated out to the street on the surface of the water. The city firemen increased this difficulty by pouring on more water, which caused a heavier, more rapid flow of the flaming cement, so that it was found necessary to remove considerable stock from the course of the burning current. The flames were brought under control by smothering them with wet sand and earth. The cement building, a small structure, was totally destroyed, but the loss, estimated at about \$1,500, was fully covered by insurance.

* * *

The headquarters and retail store of the Franklin Rubber Co., in this city, was visited by a fire early last month, which practically destroyed the \$5,000 stock of rubber goods, mainly clothing, stored there. The company immediately secured temporary quarters at 172 A Federal street, a short block from the former location, where a new stock, fresh from the factory, is being carried. The old store will be renovated as soon as possible, and business will not be seriously interrupted.

* * *

Erskine F. Bickford, for many years superintendent of the Boston Rubber Shoe Co., Malden, and Mrs. Bickford, celebrated their golden wedding at their home in that city June 8, when many relatives and friends were entertained. They were assisted by Mr. and Mrs. Edwin L. Phipps, their son-in-law and daughter. Mr. Phipps is selling agent at the Boston office of the United States Rubber Co. Mr. Bickford, after serving in the Civil War, entered the rubber footwear business under E. S. Converse in 1865, and was identified with the company until his retirement a few years ago. He occupies several positions in Malden, being president of a bank, trustee of the Baptist Church, in which he was formerly a deacon; head of the Industrial Aid Society. He was formerly chairman of the Malden School Board.

THE RUBBER TRADE IN RHODE ISLAND.

By Our Regular Correspondent.

SPURRED on by the necessity of completing government orders for which large contracts are held and which will tax its capacity for the duration of the war, the Revere Rubber Co.'s plant of the United States Rubber Co., in Providence, is putting forth every effort to get into active operation the extensive Alco property, recently purchased and adjoining the property of the Revere company.

Harlowe W. Waite, manager of the Revere plant, states that the factories over which he exercises supervision are giving up more and more of their space and facilities to government work and that at the present time more than three-quarters of the factories' product is for war purposes. This percentage is expected to be gradually increased until the factories take rank with munition plants in the amount of their war output.

Because of war conditions, the installation of machinery and necessary equipment in the Alco addition is greatly handicapped and cannot proceed with the rapidity desired, but by the end of the current year, it is expected, that the new buildings will be in full operation. With the centering of the United States Rubber Co.'s truck tire production at the enlarged plant of the Revere company, Providence, may well be expected to become the colonizing center of several thousands of skilled tire workers.

Conditions for the employees are regarded as exceedingly satisfactory in that, although the close of the war will bring an end to actual war work, the rush to catch up with the shortage of automobile production will mean an uninterrupted continuation of activity, without any halt even for readjustment.

* * *

Miss Ruth Graham, formerly in charge of the hospital rooms of the National India Rubber Co., Bristol, recently volunteered for government service with the Rhode Island unit and was assigned to United States Naval Base Hospital, Navy Yard, Brooklyn, New York, but expects shortly to be called abroad with her own unit. Miss Graham began her work at the rubber company in July, 1915, having graduated from the Rhode Island Hospital in 1909, and been subsequently successful in private nursing. She is succeeded at the National company by Miss Louise Franklin, a 1916 graduate of St. Joseph's Hospital, Providence, who has had much experience in surgical cases.

* * *

The 24th annual report of J. Ellery Hudson, Chief Factory Inspector of Rhode Island, has just been issued. In the enumeration of the various factories of the State and the number of employees, the following connected with the rubber industry, employing 50 or more persons, are given:

National India Rubber Co., Bristol, 3,740; Woonsocket Rubber Co., Woonsocket, 1,268; Hope Webbing Co., Pawtucket, 1,261; American Electrical Works, Phillipsdale, 908; Revere Rubber Co., Providence, 882; Narragansett Rubber Co., Bristol, 699; American Wringer Co., Woonsocket, 603; Davol Rubber Co., Providence, 556; Phillips Insulated Wire Co., Pawtucket, 529; Bourn Rubber Co., Providence, 525; Washburn Wire Co., Phillipsdale, 349; Glendale Elastic Fabric Co., Providence, 154; International Rubber Co., Barrington, 143; Mechanical Fabric Co., Providence, 123; Anchor Webbing Co., 99 at Woonsocket and 88 at Pawtucket; Columbia Narrow Fabric Co., Shannock, 105; Atlantic Tubing Co., Knightsville, 89; Hill & Lacross, Howard, 80; Collyer Insulated Wire Co., Pawtucket, 62, and Glencair Manufacturing Co., Pawtucket, 52.



RUTH GRAHAM.

As stated in this correspondence last month, because of the activities of agitators and organizers of the Allied Workers' Union it became necessary for the Federal Government to establish a military police guard at the National India Rubber Co.'s plant at Bristol, so that the fulfilment of government contracts would not be interfered with.

On one occasion last month nearly 150 of the employees left their benches and work in the middle of the forenoon without offering any explanation to the management for such action. Chief James Moffitt, of the recently organized military police of the mill, succeeded in keeping the majority of them, however, at their work. Most of the men who quit in the forenoon returned to their benches in the afternoon. The company, however, is dismissing such men from its employ as it has reason to believe have been active as agitators and leaders in the trouble, and whose services are not desired.

New fare rates on the New York, New Haven and Hartford Railroad, which went into effect on June 10, have caused the officials and employees of the National India Rubber Co. considerable concern, as the new schedule more than doubles the fares. Between 600 and 700 persons, who work in Bristol, the majority of whom are employed by the National India Rubber Co., live in Riverside, Barrington and Warren. As the National company, which has extensive government contracts, would be badly crippled if the hundreds of out-of-town workers were to quit on account of the increase, it has made arrangements to pay the extra fare for its employes.

* * *

The National India Rubber Co. celebrated the anniversary of the birthday of the National Flag on June 14 with exercises during the noon hour at the entrance to the mills on Wood street, Bristol, at which more than 3,000 employees were present. A new American Flag was hoisted and broken out at the top of the staff. "The Star-Spangled Banner" was sung as a solo by Miss Elsie Nisbet, the employes joining in the chorus. The salute to the flag was given and patriotic addresses were made, at the conclusion of which "America" was sung in chorus. Miss Phyllis Farrally hoisted the flag.

Besides the numerous additions and improvements that are being made to the buildings at the plant of the National India Rubber Co., Bristol, a large number of young maple trees were recently planted along the walks in front of the factory on Wood street.

The company has just completed a new water pressure tank on the Wood street premises, for better protection from fire. The tank is of steel, 136 feet high, and has a capacity of 150,000 gallons.

A meeting of the managers, foremen and forewomen connected with the National India Rubber Co. held an interesting and instructive conference at the DeWolf Inn early in the month. Vice-president George Schlosser gave a short talk pertaining to the industrial relations between the laborers and officials at the plant, and reports were read by Mr. Wahlgren. Mr. Brown of the employment bureau of the factory also gave an interesting talk. Refreshments were served, and "The Star-Spangled Banner" was sung before leaving.

* * *

The 1,500 employes of the Alice Mill of the Woonsocket Rubber Co. participated in a flag raising at the noon hour on June 14, the only guest being the speaker, John C. Cosseboom, clerk of the Woonsocket Selection Board, who pointed out that Woonsocket rubber boots are being worn by thousands of our soldiers "over there." He reminded his hearers that the red stripes on the flag represented the blood of sons of almost every nation on the globe, and that all his hearers should call the flag "our flag." The exercises opened with the raising of the flag into position on the flagpole that tops one of the big towers, while the entire gathering stood at attention and the Alice Mill band played "The Star-Spangled Banner."

The capital stock of the Collyer Insulated Wire Co., Pawtucket, has been increased from \$200,000 to \$500,000, all paid in.

It is understood that the reason for increasing the capital at this time is to make needed extensions, alterations and improvements to the plant, the operations of the company having developed to such an extent during the past year that it has outgrown its present facilities. Plans are being worked out for the new work and changes and will be pushed as rapidly as possible.

The officers of the corporation are: Howard W. Fitz, president and director; Hugh F. MacColl, treasurer; Edward C. Bowen, secretary and director, and Robert C. Moeller, director.

* * *

The Arcade Rubber Co., which conducted a retail store at 76 Weybosset street, Providence, has closed out its entire stock, sold its fixtures and given up business.

* * *

The American Wringer Co. is enlarging its present office building on Social street, Woonsocket, by the erection of an addition, 12 by 4 feet, one story high.

* * *

The Bourn Rubber Co., Providence, has just purchased another lot of land for the extension of its plant, the latest acquisition adjoining its other property on Warren street.

THE RUBBER TRADE IN TRENTON.

By Our Regular Correspondent.

THE many rubber manufacturers of Trenton have taken advantage of the order issued to John S. Broughton, president of the United & Globe Rubber Manufacturing Cos., and fuel administrator for Mercer and Burlington counties, and have filled their bins with coal for the coming winter. The second week in June was known as Coal Week, when manufacturers were allowed to receive their usual supply after filling out fuel cards stating what quantity they would need. None were allowed to receive more than the card called for.

* * *

The government order limiting the importation of crude rubber from overseas to a total of 25,000 tons from May 6 to July 31 is not creating any concern among Trenton rubber manufacturers. John S. Broughton, president of the United & Globe Rubber Manufacturing Cos., when asked if this action would curtail the output of Trenton manufacturers, said that no trouble is anticipated unless the restricted period is extended longer. Then there would be reason for anxiety. Mr. Broughton said that the Trenton rubber concerns have a supply of rubber on hand sufficient to carry them over the restricted period. Wire and cable manufacturers also have enough raw material to last for several months.

* * *

Both the Trenton rubber manufacturers and their employees contributed liberally during the recent Red Cross drive. The Empire Rubber & Tire Co. headed the list with \$6,750.30, given by the 1,250 employes, while the officials of the concern made individual contributions. Many of the employes were so enthusiastic over the drive that they pledged \$2 a month for a period of one year. Alfred Whitehead, president of Whitehead Brothers Rubber Co., contributed \$100, the company gave \$500 and the employes \$125.25. The Hamilton Rubber Manufacturing Co. and its employes contributed nearly \$7,000, the United & Globe Rubber Manufacturing Cos. contributed \$800.20, while the Globe Rubber Tire Manufacturing Co. gave \$500 and its employes \$275. The gifts of other companies were: Essex Rubber Co., \$2,500; Acme Rubber Manufacturing Co., \$243.25; Ajax Rubber Co., Inc., \$1,754; Home Rubber Co., \$384.25; Thermoid Rubber Co., \$500; DeBlois Tire & Rubber Co., \$25; Woven Steel Hose & Rubber Co., \$100. The eighty girl employes of the Essex Rubber Co. formed a Red Cross flying squadron and

managed to collect \$625 both in and out of the plant. All visitors to the plant were asked to contribute. The company has both a service flag and a Liberty Loan honor flag flying from the top of the office building.

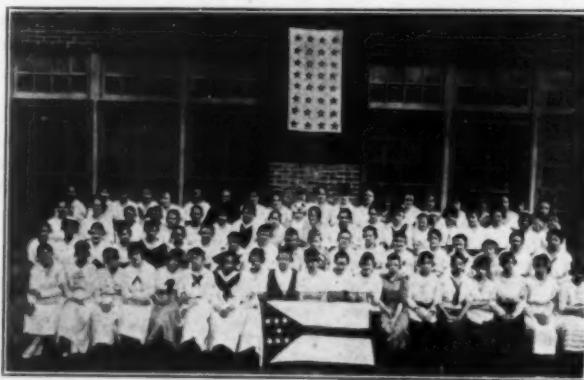
* * *

The employes of the Globe Rubber Tire Manufacturing Co. held a flag raising during the past month in honor of the many employes who have joined the Army.

The Globe Rubber Tire Manufacturing Co., Trenton, New Jersey, has elected J. B. Linerd president, and appointed Dr. Herbert W. Kugler general factory manager and R. E. Glass general auditor. This company has recently opened a new branch at 2029 South Michigan avenue, Chicago, in charge of H. E. Vosseller.

* * *

Incipient strikes in three Trenton plants were summarily settled last month. The rubber companies, although badly in need of help, will not tolerate labor trouble at this time when the country is in need of supplies. The municipal, State and



EIGHTY GIRL EMPLOYEES OF THE ESSEX RUBBER CO., WHO ARE MEMBERS OF THE RED CROSS FLYING SQUADRON OF THAT COMPANY.

national employment bureaus opened in all the large cities in New Jersey are beginning to furnish help to the rubber mills. Experienced workmen are receiving good wages and the only temptation for them to leave is the higher pay at the munitions plants.

* * *

Counselor Anthony S. Brennan has been appointed by the United States District Court as receiver for the North American Rubber Co., a Delaware corporation, with an establishment for the manufacture of tires at 34 Parker avenue, Trenton, New Jersey. The machinery, stock, etc., of the concern are to be sold to satisfy a judgment of \$2,896.41, secured in the New Jersey Supreme Court by Robert C. Dunham. The application for the receiver was made by Abram S. Howell, of New Brunswick, who claims the company has assets in stock, etc., of \$2,500. A petition in bankruptcy was filed against the company recently by Augustus S. Crane, of Elizabeth, and by two other creditors.

* * *

Horace W. Fox, son of Frank F. Fox, Trenton representative of the Rubber Trading Co., 9-15 Murray street, New York, has enlisted in the Naval Reserves, Pelham Bay, New York.

* * *

Albert McDonald, production supervisor of the Essex Rubber Co., has been summoned by the United States Shipping Board to devote his time to war work. His position at the rubber mill will be kept open for him when he returns.

The Rubber Trade in Great Britain.

By Our Regular Correspondent.

THE raw rubber situation continues to furnish surprises. There is no need to enlarge upon the present situation, as it is well known to all concerned on both sides of the water as regards the limitation of imports into America and the astute fixing of a maximum price by the Government of the United States. The fall in values which occurred at the beginning of May was not, of course, particularly to the liking of those manufacturers who had covered their requirements well ahead at 2s. 7d. per pound. But as a manufacturer said to me philosophically:

You can go on forever backing your judgment about the future course of the rubber market and come out wrong. All you can do is to work on the market reports of the day, and there is always this about it; if your ideas as to the future trend of prices turn out illusory, you may take it that many if not the bulk of your competitors are in the same position.

Much the same sort of thing may be said of betting on horse races and other forms of speculation, and it is certainly no use harping on what might have been. Naturally the numerous shareholders in plantation companies are nervous about their future dividends, which must be appreciably reduced, as it will be essential for the directors to keep the estates in good order for the boom demand which is confidently anticipated.

The new Man Power Bill will not have much effect upon the rubber trade, as the men concerned are for the most part engaged on war work and these are exempt. Difficulty concerning various supplies may, however, be accentuated. For instance, as regards the main Lancashire industry of cotton spinning and weaving, exemption is largely given to shipping firms, i. e., those who export the finished goods, while the actual producers and those engaged in the large home-trade side of the business are not exempted.

A prominent feature in the mechanical trade which keeps fairly busy is the demand for vulcanite. Our rubber manufacturers have tackled this formerly neglected branch with commendable energy since the war brought about the cessation of foreign supplies, and quite satisfactory results have been attained. Our goods may not have, in all cases, the finish and appearance of what used to come from the Continent, but they do their work. The enforced limitation of American supplies has, of course, acted recently as a spur to home output.

RUBBER SUBSTITUTE.

Like a good many other chemical industries, rubber substitute manufacture is faced with difficulties at the present time and rubber manufacturers are warned that their present diminished supplies may possibly be followed by a total cessation. Scarcity of oil seems to be the root of the trouble, oils generally being now controlled by one government department or another, priority in sale being based on the national need for the products. Thus it has been held that the country can scrape along without any new linoleum for the time being. Oil substitute is in a rather difficult, not to say delicate position because the bulk of rubber goods being made at the present time is on government account, and it is whispered that the government officials have more than one reason for withholding supplies of vegetable oils to substitute manufacturers. Be this as it may, an awkward situation has arisen, and it looks as if the April price of 8d. per pound for white substitute will not remain the maximum. No doubt rubber reclaimers will take advantage of the situation to press their wares, especially as it is current that a good deal of the substitute now being sold is not of the usual high quality, some of it indeed being stated to possess serious

defects. The substitute manufacture is not, of course, limited to any one oil, but rapeseed oil has been generally used for the best brands and some rubber manufacturers stipulate this. In the early days of substitutes, nothing was added to counteract acidity, but now it is customary to add some alkaline base against which there appears to be nothing to say, unless the addition is in such quantity as to constitute a cheap adulterant, and at the same time alter the low specific gravity of the substitute, a point that has always weighed in its favor in the rubber trade. It remains to be seen whether some non-controlled oil will be found by the use of which the manufacture can be continued, but rubber manufacturers are proverbially chary of new products, so that sales cannot be taken for granted. There is a feeling in some quarters of the trade that the position might engage the attention of the Rubber Manufacturers' Association with the object of a united demand for higher prices for such goods as may perchance have to be made of higher quality than buyers habitually demand or wish to pay for. The case, however, presents difficulties, making it doubtful if any concerted action of this nature will be taken.

J. MANDLEBERG & CO., LIMITED.

At the annual meeting of this well-known Manchester waterproof company, held early in May, the chairman, Sir Charles Mandleberg, had the customary progress to report. The total dividend for the last year was 22½ per cent against 20 per cent for the previous year. Moreover, the increased dividend was earned on capital which had been augmented by the issue of 60,000 bonus shares out of accrued profits. The chairman had many interesting things to say, which we have not space to mention at length. Research work in connection with specialized war requirements had been carried out. The nature of this work was not divulged, but it was said that the information gained would be of great value to the firm in its ordinary trade in the future. By government request the factory had been enlarged by a new building, and altogether had been considerably concerned with war work. An ominous factor ahead, the chairman said, is the enormous taxation which will be a permanent burden as a result of the war. The only way to cope with this is an enormous extension of exports. This is a subject which, as regards our trade generally, Sir Charles Mandleberg has much at heart, he being the author and advocate of a scheme whereby a number of firms of standing would subscribe to maintain in distant countries a well-paid trade consul who would be solely concerned with the pushing of business and maintain a staff of local linguists and travelers.

MOTOR GAS BAGS.

This industry, after an initial period of inflation, suddenly collapsed—the industry and not the bags—and a factory which had been specially organized for the business reported not having had an inquiry for five or six weeks. How far the impending report of the government committee was answerable for this stagnation is unknown, but the report has now been issued. The main features are a commendation of the use of gas in flexible containers where these come up to specific requirements. Referring here briefly to the specifications, the khaki-dyed cotton wigan textile is to be two-ply diagonally doubled, and after impregnation with a primary coat of rubber it is to be proofed with no fewer than six coats of rubber containing not less than 90 per cent of first-grade native or plantation rubber. The weight of the proofing is to be six ounces per square yard between the plies. Vulcanization is to be by steam heat, the dry heat and cold cure processes being prohibited. This

specification for a pure rubber proofing is what I suspected would be enjoined, though it would be interesting to know if any of the witnesses examined by the committee gave evidence of any disasters having occurred through the use of the low-quality proofs, mostly unvulcanized, that were used in the gas-bag rush of last November. These were sold without any guarantee as regards permeability to gas, whereas the standard container of the future must conform to the following test: the permeability of the fabric to hydrogen must not be more than 10 liters per square meter per 24 hours when tested on the National Physical Laboratory type of apparatus at a constant temperature of 15.5 degrees C., and an excess hydrogen pressure equal to one inch of water. The enforcing of this test amounts to a guarantee of efficiency, and not many of the numerous firms who supplied the no-guarantee bags will be keen on going into the new business which will probably gravitate to a few firms and these will do it only at a price. At the moment there is practically no spreading machine capacity available for private business, government orders still being paramount.

PROXIMATE ANALYSIS OF PROOFED FABRICS.

A matter which of late has become of considerable importance is the determination of the relative weights of fabric and rubber proofing in proofed goods. At present, specifications generally call for a definite weight of proofing per square inch or so many square inches, as the case may be. The determination is not quite the simple matter that it might be presumed to be, as besides the personal equation there are other directions in which errors of importance may arise. For instance, is the amount of proofing removed from the fabric and weighed to be considered the actual amount present, or is an allowance to be made for the small quantity adhering to the fibers? The point is of importance because as a definite procedure is followed, it is difficult to say whether differences in the results obtained are due to variations in the methods of testing or to inequalities in spreading. Generally speaking, there is by no means the uniformity in spreading that is supposed to exist, especially in these days of spreaders male and female who have been trained in a week. The matter cannot be discussed at length here, though it certainly seems to deserve more attention than it has received in the past. On March 12, Mr. Porritt, chief chemist of the North British Rubber Co., Limited, read a paper before the Edinburgh section of the Society of Chemical Industry, on "The Isolation and Examination of the Textile in Rubber Proofed Cotton Fabrics." In this paper, which has some bearing upon what I have just said, he pointed out that the removal of the proof with solvents left the threads of the fabric still impregnated. The points I have raised were not within the scope of Mr. Porritt's paper, but it certainly seems that the unremoved proofing should count as part of the total weight of proofing present, and all the more as its amount may be expected to vary with the nature of the proof and the details of the spreading procedure. After describing his methods of extraction with different solvents, and the final weighing of the dry fabric, the author concluded with the following important remarks:

The fact must not be overlooked that the small pieces of material employed do not constitute average representative samples, and that consequently the results are open to errors arising from uneven yarn, weaving faults, and irregular spreading.

And so will say most of us.

CHEWING GUM.

Several shops, the windows of which exhibit a somewhat bare appearance owing to prevailing restrictions on their normal trade, are now showing American chewing gum in five or six varieties, and from what I hear the chewing habit has spread from the Canadians who introduced it to Britishers. Like the Athenians of old who were always desirous of some new thing, I bought a packet of spearmint in my local shop. No infor-

mation was obtainable as to how it was to be used, but subsequently an acquaintance said he believed one ate the whole of it. As it did not seem very palatable I did not do so and am glad that I refrained, as further inquiries elicited the fact that that is the last thing one should do. I suppose there is nothing to prevent the manufacture of chewing gum in this country should the demand exceed the limit of freight space for the commodity. One of the troubles—perhaps not the most important one to be anticipated—would be the fixing of the excess profits duty on an industry with no past.

BRITISH RUBBER MANUFACTURES, LIMITED.

This firm is one of a small number of new rubber works which have sprung into existence since the war started. The works are at Acton, a mile or two out of London, and the financial position is now such that a receiver for the debenture holders has been appointed by the court. The situation is somewhat peculiar, as the works are fully engaged on government work, and it has been stated by the receiver that unless some arrangement of the finances is come to, the works will probably be taken over by the War Office. The present condition appears to have come about in a simple manner, namely, that the profits earned by government contractors three years ago have now been very much cut by action of the authorities. This applies, of course, all around the various industries, but old established concerns are in a much better position to deal with the changed condition of affairs than are those which have been recently promoted. A proposal from the directors of the De Dion Motor Co., Limited, that they should take over the Acton works and finance the company is now under consideration by a small committee of the creditors of the British Rubber Manufacturers, Limited.

RUBBER GROWERS' ASSOCIATION.

At a recent meeting of the Rubber Growers' Association, held in London, the chairman, reviewing the position of the rubber industry, said that the manner in which planters had responded to the suggestion to restrict outputs, was disappointing and did not promise more than a reduction of 30,000 tons on the 1918 estimate, leaving a world's crop of some 265,000 tons. If America continued to restrict rubber imports, her consumption for twelve months from May 1 would be 100,000 tons instead of 180,000, and with the rest of the world taking 50,000 to 60,000 tons, the world's consumption would amount to 160,000 tons.

In view of the serious nature of the position, therefore, the council placed the matter before the secretary of state for the colonies and asked that he might receive a deputation on the subject.

At the election which followed this speech, Sir John Anderson was appointed chairman, J. Alec Roberts vice-chairman, and the outgoing chairman, Sir Edward Rosling, was elected an ordinary member of the council.

The membership of the association is 833—535 company and 298 private members—against 767 a year ago. The issued capital of company members is £53,000,000, against £50,000,000 a year ago, and the total acreage owned by them and planted or interplanted with rubber is 904,277, an increase of about 34,000 acres.

ACTION OF CAUSTIC SODA ON RUBBER.

Dr. D. F. Twiss, chemist of the Dunlop Rubber Co., Limited, Aston Cross, Birmingham, England, in a communication to the editor of THE INDIA RUBBER WORLD, points out that British patent No. 110,059, December 9, 1916, of the Dunlop Rubber Co., does not claim the discovery of the effect of caustic alkali on the vulcanization of rubber, but covers a special method of application by which it is possible to blend it with the rubber in a highly uniform manner, and thereby to obtain greatly superior results. The above information will eliminate any misconception that may have arisen through former references to this subject that have appeared in these columns.

Miscellaneous Foreign Notes.

MANUFACTURE OF RUBBER CLOTH IN HONDURAS.

A NEW industry has recently been established at La Ceiba, consisting of the manufacture of rainproof rubber cloth for all purposes.

AUSTRALIA'S IMPORTS OF RUBBER GOODS.

During the fiscal year ended June 30, 1917, Australia imported rubber and manufactures of rubber to a total value of £764,644. The chief countries of origin and the amounts supplied by each were:

America	£414,392
United Kingdom	249,212
British possessions	41,117
Japan	13,179

FRENCH COLONIAL AGRICULTURAL CONGRESS.

This congress, opened on May 21, 1918, by the President of the republic, was organized by the *Union Coloniale*, which considered the time appropriate for discussion of the resources of the French colonies, rather indifferently exploited before the war.

Among the many products represented, rubber naturally found a place. The committee for this section consisted of Messrs. Bergougnan, of the Bergougnan company, and Michelin, of the Michelin concern—honorary presidents; M. Jumelle, of the Faculty of Sciences of Marseilles, and director of the Colonial Museum of Marseilles—president; O. Dupuy, president of the Indo-China Rubber Planters' Association; Lamy-Torrilhon, honorary president of the Rubber Council, and M. Girard, manager of the Société des Plantations de Suzannah—vice-president.

It was stated that if the quality of the Indo-China product, as well as that of the wild rubbers from Africa, was improved, French manufacturers would not have to turn to foreign sources for most of their supplies. In this connection it was pointed out that French rubber planters were practically without that scientific guidance which was daily helping their colleagues in the British and Dutch colonies to improve both the quantity and the quality of their crops.

PARA RUBBER SEED OIL.

The February issue of "The Agricultural Bulletin of the Federated Malay States" contains an interesting article by F. G. Spring and F. W. F. Day on the commercial possibilities of Pará rubber seed as an oil producer.

In September, 1916, a consignment of 30 tons was sent to Rose Downs & Thomson, Limited, Hull, for crushing and valuation. The oil realized £50 per ton, while £8 per ton was obtained on the residual cake. Linseed oil at the time stood at £60 per ton. The difference of £10 per ton, it is pointed out, was probably due to the prejudice with which all new products have to contend.

The entire seed yields about 24 per cent and the kernel from 42 to 45 per cent of commercially available oil. Expressing experiments on a fairly large scale are now being carried out at the Department of Agriculture and will, when completed, provide more exact information on this point. Samples both of the oil and the residual cake will then be available for distribution among interested parties.

Reports on samples of the oil sent to various manufacturers showed that though it is a drying oil, it dries less quickly than linseed oil. Thus, while it can be employed instead of this oil in the manufacture of soft soap or of certain rubber substitutes, it is not likely to replace linseed oil in paint and varnish while prices are normal.

Feeding trials with the seed cake proved that it was excellent for cattle.

The fact that Pará rubber seed oil is of high quality, requires hardly any refining, is obtained from a waste product available

in great quantity, easy to collect, transport and store, and easy to crush, points to enormous possibilities for a future rubber seed crushing industry.

JAPAN AND THE RUBBER LANDS (RESTRICTION) ENACTMENT.

In view of the fact that the Japanese press was particularly loud in denouncing the Rubber Lands (Restriction) Enactment, passed in the Malay States last year, as being especially aimed against Japanese, it is interesting to learn something about the laws regarding the acquisition of land in Japan by foreigners.

According to a measure adopted in 1910, but not yet published, foreigners who wish to purchase land in Japan must be domiciled there and must be citizens or subjects of a land where similar rights are granted to Japan. Furthermore if they lose their domicile, they also lose the right of ownership to their land and must dispose of it within a year, otherwise it is confiscated. A sale of this kind would amount to a forced sale, where the owner would have to sell his property at any price. This law, harsh as its conditions are, is not yet even in effect, so that up to the present the individual foreigner cannot buy a foot of land in Japan. And the same applies to Formosa, a practically undeveloped island. If the English adopted a similar law with regard to Japanese, the latter would not be allowed to purchase any land in Malaya at all, seeing that British subjects are not permitted to acquire land in Japan.

THE DUNLOP RUBBER CO. OF AUSTRALIA, LIMITED.

A typical instance of Australian enterprise is supplied by the development of the above company. About twenty years ago, there was a Dunlop factory in Melbourne, which, however, appears merely to have assembled imported goods. Later, an American named Kearns, and three foremen were engaged, and the works which to-day cover seven acres and employ 1,500 hands, were definitely started. But the problem of perfecting the quality of the goods was not solved until S. F. Roberts, with his wide experience gained in American and Scotch laboratories, entered the business. To-day, the company imports 70 tons of rubber a month and manufactures more than 1,000 different kinds of rubber goods, including rubberized fabrics, heels—the output of which has been 3½ tons a week, milking-cups, rollers, stair-treads, floorings, hose, etc. Tires, of course, are the chief specialty, though Dunlop conveyor-beltting has earned a reputation in the expanding Australian market that has driven imported rivals from the field. One of the newest products is the "Kromhyd" rubber sole for boots—an entire sole of fibrous compound.

RUBBER BALLOONS FOR WIND OBSERVATION.

Until 1916 the Royal Netherlands Meteorological Institute at De Bilt, near Utrecht, Netherlands, imported from France small rubber balloons for wind observations in the upper air. After this date, supplies from Paris were no longer forthcoming, and to continue the wind observations, Holland was forced to make the balloons herself. These she succeeded in producing, and it is announced that the small, light rubber bags made in an automobile garage at Utrecht can, after certain chemical treatment, easily be inflated into large balloons which are plainly visible in the air. It is further claimed that on favorable days observations have now been made at a height as great as 15 kilometers (9.32 miles), a height never before recorded by the Institute.

These balloons are pure white in color, transparent as glass, and are said to form a particularly favorable image in the telescope—different from the former imported article, whose golden tint in the air detracted from long-distance visibility through the telescope.

GERMAN SUBSTITUTES IN INSULATED WIRE MANUFACTURE.

THE English periodical, "Engineering," gives some interesting details regarding the measures taken in Germany to cope with the shortage of rubber and other insulating materials, as well as of electrical conductors.

The first regulations concerning the manufacture of insulated wires were issued in December, 1914, and provided that insulated conductors and wires—other than copper—were to be of aluminum or flexible tinned, galvanized, or lead-coated iron, with a conductivity of at least seven. Single conductors were not to exceed an area of 16 square millimeters nor stranded conductors, an area of six square millimeters, for each wire. Multiple conductors were to comprise a minimum of seven wires of 1.4 mm. maximum diameter. Conductors were to be surrounded with a well-impregnated paper cover, 0.8 mm. to 1.2 mm. thick—according to the cross-section of the conductor, and over this was to be a covering of cotton, hemp, etc., while the exterior envelope was to consist of a non-corrodible metal (not lead) of at least 0.25 mm. thickness. Such conductors might be used only for low voltage and on dry premises; for use on damp premises, they had to be lead-fitted; in any event they were to be fixed visibly. The current density on the iron conductors was to be in the proportion of 1: 2.8 to that permitted for copper.

In March, 1915, the regulations were altered for paper-covered wires, zinc having been admitted as a conducting material, to be used solid up to 16 square mm. area. At the same time it was ruled that zinc conductors with insulation of a rubber composition were to be used for low-voltage installations on fixed apparatus, as it was found that the coated conductors could not entirely replace the ordinary vulcanized lines, which were becoming more and more scarce, owing to the shortage of copper and rubber. The rubber composition employed was prepared from reclaim, but since this product, although produced with the utmost care, could not equal ordinary vulcanized rubber as regards elasticity and durability, the minimum thickness of 0.8 mm. was raised to 1.5 mm. Conductors thus insulated are 1.5 square mm. to 6.0 square mm. in area when solid, and when multiple, 1.50 square mm. to 150 square mm. The conductivity must be at least 15.

On account of the stiffness of the wires and the consequent damage to the rubber layer, iron was excluded and, besides copper and aluminum, only zinc of the most pliable kind permitted for the new rubber conductors. At the same time the minimum thickness of the rubber coating was reduced.

In August, 1915, manufacturers were instructed to provide their zinc and regenerated rubber conductors with a light green thread marking, to distinguish them from ordinary vulcanized wire. For flexibles, an insulating cover of regenerated rubber was permitted around a fine iron wire with a cross-section from 2.5 to 4 square mm.

Early in 1916 it was announced that unwelded tubes enclosing insulating tubes of paper, might be covered with a thick zinc coating instead of one of lead. As raw materials become scarcer, new rulings followed, and in September, 1916, it was prohibited to use outer coverings of cotton on rubber insulated zinc and aluminum conductors of 16 square mm. or more, while similar conductors were permitted to have an inner paper yarn coating around the separate wires, instead of rubber-impregnated windings. At the same time it was ruled that the resistance of copper might amount to 20 ohms per kilometer of 1 square mm. cross-section at 20 degrees C.

As to substitutes, paper has been extensively used to replace jute and hemp in underground cables, and cotton and rubber on transmission wires and in coils. Regenerated rubber, in combination with bitumen and other tar substances has been found very valuable. Instead of hard rubber, Futuran, a condensation product of phenol and formaldehyde, has been introduced. It is

not hygroscopic and can, it is claimed, be compounded so as to be fireproof and acid-proof. Other similar substances are Wenjacite and Aswelite, the latter having been brought out by the Siemens-Schuckert Co. The firm of Voight & Haeffner has produced a substitute for oil in electric apparatus, called Benzinoform, a tetra-chloride-carbon substitute, which will not burn. However, the article is not quite satisfactory as it is too volatile.

RESILIENT WHEELS IN GERMANY.

The "Zeitschrift des Vereins Deutscher Ingenieure" of October, 1917, discusses a number of resilient wheels of various types, which have been introduced to replace the rubber tire. These wheels, which have been found quite serviceable, are classed under two groups.

Group 1: (a) the spring wheel uses spiral springs wound from square steel and mounted radially in one or two rows between cups secured to the inner and outer wheels. There is risk of the springs being displaced when running over obstacles or round corners, particularly at more than moderate speed. (b) The Moll wheel is of similar construction, except that side plates are used to protect the springs from dirt, and telescopic tubes are used inside the springs to prevent lateral displacement. These tubes are extended as spherical end caps, which give the requisite degree of transverse flexibility. (c) The Fruth wheel uses a series of oval springs placed on their side in troughs attached to the outer and inner rims. Bolts through the troughs pass through the overlapping loops of consecutive springs. The wheel is rather less flexible radially, since the springs are compressed in the plane of their winding instead of axially. One of the troughs slides in the other, and so takes up transverse forces. The construction provides circumferential flexibility against accelerating and breaking forces. The whole can be mounted as a unit in place of a rubber tire. (d) The Sievert wheel retains rubber or similar material for elasticity, and uses a wooden road rim. A rubber ring is held on each side of the felloes by through-bolts, which also secure steel side rings carrying the outer wooden rim clear of the inner wheel. All wear comes on the wooden rim, and the only connection between this and the inner wheel is through the rubber side rings. These are rather flexible and liable to side-slip. Group 2: (a) the Siemens and Halske wheel uses radially mounted spiral springs (imperfectly protected against dirt and transverse forces) and a flexible outer rim. The outer rim is built up from strip steel wound to form a hoop. (b) The Flohr wheel is similar, save that the outer rim has steel links (resembling link belting), the pins of which serve also to carry cups for the radial spiral springs. The rim pins are exposed to dirt and moisture.

MANUFACTURE OF RUBBERS IN NORWAY.

Vice-Consul H. E. Carlson, Christiania, reports that Norway possesses but one factory for the manufacture of rubbers and that this is situated at Mjondalen. The present situation has greatly affected operations, and it is stated that the factory is kept going by rubber washed ashore along the Norwegian coasts. The rubber is usually found by fishermen, who turn it over to the state which, in turn, sells it to the factory at a price equivalent to \$2.15 per pound. The factory must, however, submit all orders to the Department of Commerce for approval.

It is reported that the plant is to be enlarged to such an extent that it will be able to supply the needs of the whole country when normal conditions return.

EXHIBITION OF NETHERLANDS EAST INDIES PRODUCTS.

An exhibition of various tropical products, including rubber, from the Netherlands East Indies, was held a short time ago at the State Commercial Museum of Tokio. It is considered an important enterprise that will have far-reaching effects on the trade of the Far East.

INDIA'S RUBBER EXPORTS.

During the period 1916-17 the exports of crude rubber from South India were valued at \$3,596,344, against \$2,919,900 during 1915-16.

"GERMANY'S PROSPECTIVE LOOT IN ASIA."

UNDER this title, Ellsworth Huntington discusses in the June, 1918, issue of "Asia," what Germany may expect to get from Asia during the next few years if the war should be prolonged, or if we should make a weak peace now. By Asia, he means the territory stretching north from northern Persia, Russian Turkestan, Mongolia and northern Manchuria.

Among the articles considered, rubber finds a place, and this is what the author has to say about it:

It [rubber] can be loaded on Dutch ships [from the Dutch East Indies] and carried north past Japan to the wild shores of eastern Siberia. Japan may blockade Vladivostok, but a blockade cannot possibly prevent large quantities of this material from entering through some part of the long coast line. Nor can Japan prevent caravans from coming overland from Siam and the great forest regions of Indo-China. In 1913 Germany used about 25,000 tons. Now she needs much more and the value is several times as great. Remember the stories of rubber . . . sent by post in the early days of the war, . . . the stories of German automobiles fitted out with all sorts of makeshift tires . . . Free access to Asiatic resources will by no means do away with this.

This year there may be no great improvement from the German point of view, but next year rubber will be flowing into the country in a steady stream from Asia.

Since Germany would not have to run blockades, once peace were declared, the author is evidently describing probable methods of securing rubber in war-time. Then it may be said that in the event of Germany's obtaining possession of Vladivostok, there would be more than a Japanese blockade to run.

Why should it not be supposed that England would keep an eye on Dutch shipping from Singapore? As to supplies carried by caravan from the forests of Siam and Indo-China, it is to be feared that these would not be sufficient to maintain a steady flow of rubber into Germany. In the first place, Siam has broken off relations with Germany. In addition, the total exports of rubber from that country in 1917 were only about 200,000 pounds.

Indo-China is the name given to the territory comprising Burma, which is a British colony, French Indo-China, and Siam. Siam has already been discussed; there remain, therefore, only the British and French colonies, and surely the author does not believe that these will sell rubber to Germany in war-time? Even supposing Germany could get rubber there, how far would the 2½ million pounds, or some 1,200 tons, that Burma is able to produce at present and the 600 tons that could be exported by French Indo-China, help toward creating that steady stream that is to supply Germany with all the rubber she needs? And then this would have to go by caravan!

Mr. Huntington further illustrates his remark by maps, one of which shows the distribution of various products over Asia. According to this map rubber grows in abundance in Burma, French Indo-China and in a portion of Siam. Borneo furnishes as much as Sumatra; a little is produced in the north-western portion of the Federated Malay States, the rest of the land, however, being devoted to tea and rice; while there is not a sign of rubber in South India, Ceylon or Java!

AGRICULTURAL EXHIBITION IN ECUADOR.

Annual national agricultural expositions will be held at Guayaquil, Ecuador, and that for the present year will be formally opened on October 8, 1918, by the municipal and federal officials. Prominence is to be given native products, including rubber, and on December 20 of each year prizes will be awarded to the best exhibits.

THE WEALTH OF QUINDIO.

D. Sandoval, of the Estación Agronómica Tropical, Colombia, presents a report of his journey to the Quindio, undertaken in November, 1917. He states that this district has rich deposits of

gold, silver, sulphur, antimony, and even platinum. The flora is varied and comprises many rubber-producing trees which yield a good quality of rubber. However, no attempt at selection or cultivation has been made.

CHILEAN MARKET FOR TENNIS SHOES.

Tennis is a popular sport in Chile and the sale of tennis shoes is especially large in the principal cities. The increase in the cost of leather shoes has undoubtedly stimulated the use of canvas footwear in this country. Persons who previously used the English rubber-soled leather oxfords, are more and more using the lighter American-made rubber-soled sneaker, and at present practically all of the business in this article is in the hands of Americans. It is estimated that the total value of the imports of canvas shoes or sneakers is over \$35,000.

The following table shows the imports, by countries, of rubber-soled, leather sport goods for the years 1913, 1914, 1915 and 1916:

	QUANTITY.				VALUE.			
	1913.	1914.	1915.	1916.	1913.	1914.	1915.	1916.
Belgium ...dozen	18	.....	.....	.....	\$53	.....	.....	.....
France	118	115	.....	67	\$345	235	.....	\$143
Germany	939	200	.....	.....	2,742	584	.....	.....
United Kingdom. 2,977	3,516	146	593	8,692	10,265	426	2,368	
United States....	331	451	.....	.....	966	1,317	.....	1,048
Other countries..	38	3	.....	363	110	9	.....	.....
Total	4,403	4,303	146	1,383	\$12,855	\$12,563	\$426	\$3,559

As will be noted, the greater part of these imports was furnished by England.

BALATA IN VENEZUELA.

IN the minds of those who talk and write of balata, there seems to be some confusion regarding the procedure of extraction. Two methods of tapping are known, the tapping of growing trees, "Borbice" method, and the tapping of felled trees, "Venezuelan" method. The latter results in a greater production at one time. By the former, however, the trees are spared for a second tapping.

There are two ways of tapping by the Borbice method. In the first of these, the trees are tapped over the whole girth of the trunk. In the second, only half the girth is tapped and the bleeders use a rope or a ladder, but no wooden spurs.

There is no question of keeping trees for a further tapping as long as the present system is in use in Venezuela, for one-third to one-half of the number of trees either die or maintain a struggling existence at best. It has been proposed, therefore, to fell trees having a diameter exceeding 15 inches, and to tap the thinner ones with a tap-hook.

The present method of granting concessions has given rise to various abuses which, added to the bad manner of exploitation, have rendered a reorganization of the industry necessary.

The balata industry can be looked on as one of the important ones of Venezuela. Fortunes have been made in it, and with proper management and necessary capital, large returns can be obtained. In the past, considerable trouble has been experienced owing to the absurd system of heavy advances before the workers left for the forests.

My analysis of Venezuelan balata taken on the ground, is:

	Rainy Analysis. Per Cent.	Dry Analysis. Per Cent.
Ash	0.8	0.6
Proteids	4.2	3.9
Resin	44.3	44.8
Gutta percha	50.5	50.7
Moisture	0.2	....
	100.0	100.0

The moisture per cent was taken in the rainy season; in the dry season the moisture is practically nothing; therefore the gutta percha would be higher, say 50.7 per cent.

ALVIN Fox, Horticulturist.

RUBBER PLANTING IN UGANDA.

THE Department of Agriculture of the Government of Uganda states in its report for 1916-1917 that Para rubber is gradually being more extensively planted, while less and less land is devoted to other rubbers. Figures for the exact area devoted to the cultivation of rubber are not obtainable, as many of the European planters did not send in the required data, while with regard to native plantations there was often no basis for an estimate. However, returns from 128 European plantations showed that there were 2,545 acres planted to Para and 777 to other rubbers. Of the first, 117 acres were under and 1,048 acres over five years old. In addition to this, 484 acres under and 3,457 acres over two years old had mixed crops of coffee and *Hevea*. The figures available for native agriculture were: 1,211 acres under *Hevea* and 1,166 acres under other rubbers, indicating an increase in the acreage of Para rubber and a decrease of Ceara, as compared with the totals for the previous years. The plantations belonging to the various religious missions continue to aggregate 290 acres—169 acres of *Hevea* and 121 acres of other rubbers.

The statement of exports is more satisfactory, but shows the steady decline of wild rubber in favor of plantation, the totals for the period 1913-1917 being:

	Year ended March 31.									
	1913.		1914.		1915.		1916.		1917.	
	Pounds.	£	Pounds.	£	Pounds.	£	Pounds.	£	Pounds.	£
Wild rubber	27,216	3,647	10,416	1,107	22,056	1,838	5,538	554	400	40
Plantation rubber	4,474	834	19,454	2,934	.....	.....	52,349	4,362	71,995	5,856

Reports from the government plantations state that Para rubber is not expected to thrive in the Toro district. The trees on the government plantation, Kampala, however, continue to make good progress; they have an average girth of 20.6 inches and are seven years old. A series of 162 trees were tapped with a view to teaching new tappers; of these, 48 yielded at a much greater rate than 93 others, while 21 did not yield at all. The total yield was 60 pounds, 6 ounces, of dry rubber from 128 daily tappings. During the year 11,600 Para seed were distributed from this station.

At the government plantation, Kakumiro, Mubendi, four groups of ten-year-old trees were tapped on the half-herring-bone system, three cuts daily for a period of six months, under a native overseer, and the results were as follows:

Group.	No. of trees.	Average girth, inches.	*Tapping method.	No. of tappings.	Total dry rubber, ounces.	No. of trees not yielding.	Total dry rubber, 5 months tapping.	
							No. of tappings.	after 5 months tapping.
I	45	24 $\frac{1}{2}$	Daily	79	621 $\frac{1}{2}$	39	.....	.....
II	69	25	Alternate days....	81	960	21	.....	.....
III	53	25	Every third day...	62	893 $\frac{1}{2}$	4	.....	.....
IV	51	23	Every fourth day..	46	584 $\frac{1}{2}$	5	.....	.....

*Sundays excepted.

In judging the above results it should be noted that this rubber is not in the real Para area of the country and also that the tapping is very poor, as the cuts average only eight to the inch.

Up to the present rubber in Uganda is not suffering seriously from diseases, but recently a scale insect, *Aspidiotus destructor*, Sign., was observed to attack Ceara and Para trees and in several cases caused the death of the former.

RUBBER PLANTING AND SCIENCE.

At a recent meeting of the Royal Society of Arts, Professor J. Bretland Farmer, of the Imperial College of Science and Technology, submitted a paper on "Science and the Rubber Industry." In this he pointed out that if the rubber plantation industry was to continue to prosper it had become essential that the investigations of disease and immunity, of the mode of formation of

the latex and its constituents within the tree, and the breeding of better stock should be considerably increased. Instancing the action of the German chemists in well-nigh ruining the indigo plantations by their synthetic product, he said that unless we succeeded in properly and intelligently harnessing the natural forces, and in manipulating the natural basis for the plantation rubber, it might well happen that the chemist would produce caoutchouc on a commercially paying scale in the factory. He urged that the matter should be taken in hand by the governments specially concerned and administered on well-considered lines by a body in which the planting industry, and also the relevant branches of science were properly represented.

NOTES FROM THE NETHERLANDS EAST INDIES.

A SECTION to deal with seed culture and another to handle agricultural economy have been added to the Department of Agriculture, Industry and Commerce of the Dutch East Indies.

The latter section will study agricultural possibilities, especially with regard to the important cultures, of territories that have been slightly or not at all developed. The questions of climate, soil, labor, transportation facilities and capital needed will be thoroughly considered. All possible information will be given to foreigners wishing to invest capital in local enterprises, and

where desired, visits to established undertakings, in the company of experts, will be organized.

RUBBER PRODUCTION.

It is announced that the area devoted to rubber in the Netherlands East Indies covers some 620,000 acres, producing 43,000 tons, or a quarter of the world's output. The average yield per acre during last year was 285 pounds.

JAPAN AND THE NETHERLANDS-EAST INDIES.

The "Far Eastern Review" publishes an article by a certain Mr. Takekoshi, discussing the importance of the Dutch colonies to Japan.

After giving vent to some rather pessimistic views regarding Japan's trade and the possibility of her cutting a good figure in the next war, which will be one of economy, the writer proceeds to enlarge upon the necessity of Japan's expanding southward and acquiring the Dutch possessions. The peaceful intentions of the Japanese cannot be misinterpreted by the world, says he, and the various nations must acknowledge Japan's needs and must not unjustly forbid her to satisfy these needs. The Dutch have always experienced difficulties in governing the islands, which could with difficulty maintain their neutrality; in fact, they have more than once been a menace to Japan on account of this. After this war, Germany would extend her influence here and easily establish a base against Japan. Furthermore, the islands are so weak that they are becoming a danger to peace. To preserve the peace of the world is Japan's aim, hence her desire to possess the Netherlands East Indies, which she is quite willing to buy and pay for out of the money gained by this war.

PAPUA RUBBER.

The fiscal year 1916-17 saw a marked improvement in Papua's foreign commerce, chiefly attributable to the larger trade in rubber, copra and hemp. The quantity of rubber exported during that period was 85 tons, value \$129,848 against 43 tons, value \$72,248 during 1915-16.

The agricultural returns show an increase of 11 in the number of plantations and of nearly 2,500 in the number of acres planted. The principal crops are coconuts and rubber.

Recent Patents Relating to Rubber.

THE UNITED STATES.
ISSUED APRIL 30, 1918.

- N**O. 1,264,178. Vehicle wheel with demountable rim. C. W. Gressie, assignor, by means assignments, to The Standard Parts Company—both of Cleveland, Ohio.
- 1,264,199. Tire for vehicle wheel. D. Macomber, Muskegon, and L. Champion, Tallmadge—both in Michigan.
- 1,264,205. Pneumatic tire. M. C. Overman, New York City.
- 1,264,274. Pressure gage. A. B. Collette, Everett, Massachusetts.
- 1,264,337. Combination bust supporter and shoulder brace. R. B. Scog-namillo, New York City.
- 1,264,381. Tire tube and method of constructing same. C. F. Fisk, Trenton, New Jersey.
- 1,264,398. Vehicle wheel. P. S. Jacobs, Atlantic Mine, and G. W. Hogben, Houghton—both in Michigan.
- 1,264,500. Automobile tire. C. A. Gildemeyer, Minersville, Pennsylvania.
- 1,264,523. Device for walking upon the surface of the water, with gas balloon. M. Jelalian, Cranston, Rhode Island.
- 1,264,537. Inflation valve for vehicle tires. M. McLean, Salt Lake City, Utah, assignor to G. M. McLean.
- 1,264,542. Demountable and separable vehicle-wheel rim. H. Mote, Detroit, Michigan.
- 1,264,567. Pneumatic tire. De W. B. Smith, Deerfield, New York.
- 1,264,622. Collapsible rim for pneumatic tires. W. E. Dressel, assignor to The Ideal Collapsible Rim Co.—both of Edwardsville, Illinois.
- 1,264,659. Hose clamp. G. Klimek, Laurium, Michigan.
- 1,264,666. Beard softener. K. E. E. Ljungstrom, Washington, District of Columbia.
- 1,264,684. Self-filling writing instrument. J. G. Rider, assignor to J. G. Rider Pen Co.—both of Rockford, Ill.
- 1,264,706. Helmet for life-preservers, etc. W. W. Stallworth, Gordo, Alabama.
- 1,264,710. Ice or water bag. J. Takamine, Jr., New York City.

ISSUED MAY 7, 1918.

- 1,264,903. Tire shoe. T. H. Depew, Pittsburgh, Pennsylvania.
- 1,264,957. Solid rubber tire and rim for wheels. A. B. Mitchell, Washington, District of Columbia.
- 1,264,969. Demountable tire. J. E. Perrault, Belmont, Massachusetts.
- 1,264,977. Flesh reducing garment. T. W. Rogers, Columbus, Ohio.
- 1,265,032. Resilient tire. W. E. Andrew, Atlantic Highlands, New Jersey.
- 1,265,036. Golf ball. T. Bendelow, Chicago, Illinois.
- 1,265,062. Automobile wheel rim. E. H. Davis, Memphis, Tennessee.
- 1,265,124. Finger cot. G. M. Shumaker, Marion, Ohio.
- 1,265,234. Life-preserving suit. N. Moldovan, A. I. Madriss and A. Leavitt, all of Brooklyn, New York.
- 1,265,243. Hose supporter button. R. Parker, assignor to Parker, Stearns & Co.—both of Brooklyn, New York.
- 1,265,310. Demountable rim. J. W. Dutton, Jr., Stockton, California.
- 1,265,325. Duplex fountain pen. S. Greenfield, New York City.
- 1,265,403. Cross chain for tires. F. R. Turner, Dorchester, Massachusetts.
- 1,265,412. Demountable vehicle wheel rim. L. H. Wray, Reedsburg, Pennsylvania.
- 1,265,466. Tire filler. I. McKinnon, Salt Lake City, Utah.
- 1,265,514. Insole. A. Racicot and A. N. Racicot—both of Webster, Massachusetts.
- 1,265,556. Interchangeable tire tread. W. I. Varner, Athens, Georgia.
- 1,265,580. Animal life-preserved. M. Zofchak, Pittsburgh, Pennsylvania.

REISSUE.

- 14,467. Vehicle wheel including a series of pneumatic cushions. H. B. Coats, Veedersburg, Indiana.

THE DOMINION OF CANADA.

ISSUED FEBRUARY 28, 1918.

- 181,971. Rim for wheels. F. W. Baker, Stourbridge, Worcester, England.
- 181,972. Rim and wheel. F. W. Baker, Stourbridge, Worcester, England.
- 182,016. Hand stamp, including inflatable type cushion. R. L. Howell, Rochester, New York U. S. A.
- 182,059. Overshoe for horses. L. Richard, Montreal, Quebec, Canada.
- 182,096. Golf ball. The Canadian Consolidated Rubber Company, Limited, Montreal, Quebec, Canada, assignee of H. Z. Cobb, Winchester, Massachusetts, U. S. A.
- 182,139. Tire valve. M. C. Schweinert, West Hoboken, and P. H. Kraft, Ridgewood, coinventors—both in New Jersey, U. S. A.
- 182,152. Tire valve. O. F. R. Bromberg, San Diego, California, U. S. A.
- 182,301. Check valve. Naamooze-Venootschap, Holland, Venteil Heelsum, assignee of Ruurd Fenenga, The Hague—both in Holland.
- 182,304. Dust cap. A. Schrader's Son, Inc., New York City, assignee of H. P. Kraft, Ridgewood, New Jersey, both in the U. S. A.
- 182,314. Fountain pen. S. Josselyn, Atlantic, and S. C. Crocker, Brookline, assignee of a half interest—both in Massachusetts, U. S. A.
- 182,364. Fountain pen. B. Kumagai, Seattle, Washington, U. S. A.
- 182,410. Surgical swab with rubber cap. Bauer & Black, assignee of S. W. Williams—both of Chicago, Illinois, U. S. A.

- 182,468. Pneumatic tire. W. H. Burritt, St. Louis, Missouri, U. S. A.
- 182,503. Tire. H. A. Huber, Ottawa, Ontario, Canada.
- 182,519. Vehicle wheel. M. O'Connor, Fort Adams, Rhode Island, U. S. A.
- 182,545. Filler for tires. T. A. Sprague, Pittsburgh, Pennsylvania, U. S. A.
- 182,570. Tire shoe. The Canadian Consolidated Rubber Co., Limited, Montreal, Quebec, Canada, assignee of W. W. McMahon, Detroit, Michigan, and R. B. Price, New York City—both in the U. S. A.
- 182,604. Armored liner for pneumatic tires. S. A. Rouse and R. M. McNish, assignee of a half interest—both of Chicago, Illinois, U. S. A.

ISSUED MARCH 31, 1918.

- 182,619. Elastic core for tires. G. E. Gilmore, Cleveland, and I. V. Rosell, Akron—both in Ohio, U. S. A.
- 182,632. Gaiter with elastic strap. V. Benedetti, Palisade, New Jersey, U. S. A.
- 182,642. Shoe having a waterproof lining. W. I. Colby, Haverhill, Massachusetts, U. S. A.
- 182,654. Braided tire casing. W. H. Dunkerley, Paterson, New Jersey, U. S. A.
- 182,662. Cushion tire. P. Harder, Jr., Copenhagen, Denmark.
- 182,663. Milking machine teat cup. S. B. Harner, Xenia, Ohio, U. S. A.
- 182,671. Cushion tire. W. E. H. Humphrys, Hendon, Middlesex, England.
- 182,672. Cauked sole for shoes, with metal framework vulcanized therein. J. H. Jasper, Battle Creek, Michigan, U. S. A.
- 182,726. Rubber-soled shoe. The United Shoe Machinery Co. of Canada, Limited, Maisonneuve, Quebec, Canada, assignee of M. W. White, Clifftondale, Massachusetts, U. S. A.
- 182,729. Block tire manufacture. The Canadian Consolidated Rubber Co., Limited, Montreal, Quebec, Canada, assignee of G. B. Whittlesey, Hartford, Connecticut, U. S. A.
- 182,755. Cushion tire. The Triple Airless Tire Co., assignee of A. C. Hileman—both of Butler, Pennsylvania, U. S. A.
- 182,760. Tire and core. E. S. Jones and J. H. Jones, assignee of one-twentieth of interest—both of Mobile, Alabama, U. S. A.
- 182,761. Cushion tire. D. A. Messner and S. A. Messner, assignee of a third interest—both of Akron, Ohio, U. S. A.
- 182,772. Inner tube protector. R. N. Lago and W. J. Barrett, coinventors—both of San Francisco, California, U. S. A.
- 182,774. Elastic core for tires. F. V. Rossel and C. H. Franks, coinventor—both of Akron, Ohio, U. S. A.
- 182,849. Fountain syringe. F. J. O'Rourke, New York City, New York, U. S. A.
- 182,856. Crutch having arm rest with inflatable rubber cushion. F. Potvin, Farham, Quebec, Canada.
- 182,860. Rubber heel tread. G. E. Rollins, Brockton, Massachusetts, U. S. A.
- 182,871. Clamp for pneumatic tires. M. C. Schweinert, West Hoboken, and H. P. Kraft, Ridgewood, both in New Jersey, U. S. A., coinventors.
- 182,872. Cap for tire valves. M. C. Schweinert, West Hoboken, New Jersey, U. S. A.
- 182,915. Inner tube for pneumatic tires. The Miller Rubber Co., assignee of F. Fenton—both of Akron, Ohio, U. S. A.
- 182,989. Resilient wheel with rubber shoe. G. Greco, Pittsburgh, Pennsylvania, U. S. A.
- 183,047. Resilient tire. C. A. Smith, Wellsville, New York, U. S. A.
- 183,049. Resilient heel. J. Solomon, Oberlin, Ohio, U. S. A.
- 183,084. Rubber boot. The Canadian Consolidated Rubber Co., Limited, Montreal, Quebec, Canada, assignee of C. Lee, Naugatuck, Connecticut, U. S. A.
- 183,108. Chewing gum. The Vanola Co., assignee of F. H. Fries—both of Winston-Salem, North Carolina, U. S. A.
- 183,178. Syringe. G. W. Jessup, Boston, Massachusetts, U. S. A.
- 183,217. Stopper for hot water bottles. M. C. Schweinert, West Hoboken, New Jersey, U. S. A.

THE UNITED KINGDOM.

ISSUED MAY 1, 1918.

- 113,748. Corsets with elastic strips. D. Kopa, Sixteenth street, New York City, U. S. A.
- 113,803. Rubber in piston packing. J. Miller, 18 Buller street, and Fletcher & Co. Masson and Atlas Works—both in Derby.
- 113,809. Wheel tires. J. H. Grube, 1861 East 24th street, Cleveland, Ohio, and P. J. Maurer, Rivers, California—both in the U. S. A.
- 113,866. Artificial limbs with elastic straps. A. C. Adams, Queen Mary's Hospital, Roehampton, London.
- 113,902. Shock-absorbing pads. P. J. Krueger, 317 Western avenue, Blue Island, Illinois, U. S. A.

ISSUED MAY 8, 1918.

- 113,933. Brassieres, with elastic fabric. W. Kops, 151 West 86th street, New York City, U. S. A.
- 113,934. Brassieres, with elastic fabric. W. Kops, 151 West 86th street, New York City, U. S. A.
- 113,952. Toy submarine with twisted rubber propeller. A. F. Humphrey, and J. J. Thornton, 1936 Federal street, and R. C. Michaels, 1005 Galveston avenue—all of Pittsburgh, Pennsylvania, U. S. A.

- 113,969. Wheel tire comprising rubber sections with a continuous air passage. E. S. and J. H. Jones—both of Mobile, Alabama, U. S. A.
- 113,988. Hoof-pads of rubber, etc., for horseshoes. B. P. Gray, Ellangowan, Bishop's Road, Sutton Coldfield, Warwickshire.
- 114,071. India rubber brake lining for loom shuttle checks. R. Holden, 6 Ramsay road, and J. Duxbury, 21 Higher Eanam—both in Blackburn.
- 114,121. Rubber studs for metal shoe soles. H. Woolridge, 22 Mexborough drive, Chapelton road, Leeds, Yorkshire.

ISSUED MAY 18, 1918.

- 114,220. Artificial hand with rubber fingers. A. Pringle, 12 Springdale Gardens, and T. S. Kirk, 21 University square—both in Belfast.
- 114,260. Babies' comforters. F. P. Franklin and A. Shephard, Birkbeck Works, Birkbeck road, Kingsland, London.

ISSUED MAY 23, 1918.

- 114,299. Dust cap for tire valves. H. P. Kraft, 219 Godwin avenue, Ridgewood, New Jersey, U. S. A.
- 114,308. Wheel tire rim. H. P. Kraft, Godwin avenue, Ridgewood, New Jersey, U. S. A.
- 114,345. Washing plunger made of vulcanite. R. Cooper, 3 Warwick avenue, London.
- 114,361. Crutches, employing rubber. J. C. Roberts, care of Mercantile Bank of India, 15 Gracechurch street, London.
- 114,378. Vulcanite rectal appliances. F. A. Werner, Coventry House, South Place, Finsbury, London.
- 114,383. Rubber shock absorbers for airplane land wheels. W. E. Chester, 231 Hammersmith Road, London.
- 114,390. Accumulator molded from vulcanite and having strain-resisting strips of resilient rubber. St. Helen's Cable & Rubber Co., Warrington, and E. S. Seymour, Bolton, Latchford Without, Warrington, Lancashire.
- 114,402. Reinforced rubber suction and delivery tube for enemas, non-collapseable. Campbell, Achtnach & Co., and T. Rowe, 59 Wallace street, Glasgow.

ISSUED MAY 29, 1918.

- 114,492. Rubber tubing in connection with brushes and mops. C. Skinner, 32 Dalry Road, Edinburgh.
- 114,503. Driving belts formed of links of manila, jute, etc., treated with a solution of caoutchouc, balata, or gutta percha. J. Thame, Thorney Mill House, Iver, Buckinghamshire.
- 114,517. Gloves for electricians, etc., provided with detachable cover. A. Harri, 100 Midland Road, Wellington, Northamptonshire, and P. C. Ayers, 39 Victoria street, Westminster.

THE FRENCH REPUBLIC.

- 485,858. (June 19, 1917.) Demountable rim for automobile wheels. J. J. Foley.
- 485,998. (June 30, 1917.) Coupling for flexible pipe for inflating pneumatic tires. J. W. Frazier and F. E. Hansen.
- 486,014. (July 2, 1917.) Elastic wheel. A. L. Laborié.
- 486,023. (July 3, 1917.) Clamps for wheels with demountable rim. F. J. Moreau.
- 486,035. (July 4, 1917.) Improvements in tire supports. G. Downing.
- 486,052. (July 4, 1917.) Improvements in spring wheels. Tichenor Spring Wheel Co.
- 486,084. (August 12, 1916.) Improvements in pneumatic tires for vehicle wheels. E. André.
- 486,170. (October 4, 1916.) Non-skid device for carriage wheels and attachment. E. Rosotto.
- 486,223. (July 19, 1917.) Improvements in vehicle wheels. Rudge-Whitworth Co.

TRADE MARKS.

THE UNITED STATES.

- No. 94,357. Representation of a winged tire superimposed above a horse shoe—rubber or rubber (or its equivalent) and fabric or fiber tire shoes or casings and inner tubes therefor as distinguished from bicycle tires of the single-tube variety. Racine Auto Tire Co., Racine, Wisconsin.
- 107,490. Brownie-type representation of a chauffeur—tire-sealing compound. Alcemo Manufacturing Co., Newark, New Jersey.
- 107,568. The word GUIDE—tires, said tires being usually composed of rubber, fabric and certain minerals and colors. The F. E. Partridge Rubber Co., Limited, Guelph, Ontario, Canada.
- 108,242. Representation of a horizontally elongated diamond with the word INSHURO within white on black—fountain pens. Cleeland Inshuro Pen Co., Butler, Pennsylvania.
- 109,984. The word TRENCH—fountain pens. Mabie, Todd & Co., New York City.
- 109,587. The word VIKING—tires and inner tubes. The Combination Rubber Manufacturing Co., Bloomfield, New Jersey.

THE UNITED KINGDOM.

- 379,566. The word GADGET—india rubber pouches and cases for tobacco, cigars, etc. A. Dunhill, 30 Duke street, St. James', London, S. W. 1.
- 381,101. The word FLEXO—cycle and like saddle tops, of textile fabric covered or coated with vulcanized india rubber, the latter predominating. Micrometer Engineering Co., Limited, 41 Spon street, Coventry.
- 382,113. The word SOLIGRAM—goods manufactured from india rubber and gutta percha, not included in other classes. The Bank Bridge Stopper Works (1911), Limited, 37 Fenchurch street, London, E. C. 3.
- 382,114. The word SOLEM—goods manufactured from india rubber and gutta percha, not included in other classes. The Bank Bridge Stopper Works (1911), Limited, 37 Fenchurch street, London, E. C. 3.
- 382,191. The word DURAPED—sheeting and boot and shoe soles, made of a substance in which india rubber predominates. The Leyland & Birmingham Rubber Co., Limited, Golden Hill Works, Leyland, Lancashire.

- 381,319. The word AQUATITE—mechanical packing not included in other classes, balata belting, etc. J. Lawson & Son, Limited, Boultham Leather Works, Boultham, Lincoln.
- 381,186. Representation of a tiger with characters of the Urdu (Hindustani) language above, phonetically equivalent to BANG CHAP, rendered as TIGER BRAND—paper- or rubber-insulated electric cables. Callender's Cable & Construction Co., Limited, Hamilton House, Victoria Embankment, London, E. C. 4.
- 381,187. Representation of a lion with characters of the Urdu (Hindustani) language above, phonetically equivalent to SHARK CHAP, rendered as LION BRAND—paper- or rubber-insulated electric cables. Callender's Cable & Construction Co., Limited, Hamilton House, Victoria Embankment, London, E. C. 4.
- 381,188. Representation of a lion with characters of the Urdu (Hindustani) language above, phonetically equivalent to SHARK CHAP, rendered as LION BRAND—electric wires covered with india rubber. Callender's Cable & Construction Co., Limited, Hamilton House, Victoria Embankment, London, E. C. 4.
- 381,232. Representation of an elephant with characters of the Urdu (Hindustani) language above, phonetically equivalent to HATTIE CHAP, rendered as ELEPHANT BRAND—electric wires covered with india rubber. Callender's Cable & Construction Co., Limited, Hamilton House, Victoria Embankment, London, E. C. 4.
- 382,061. Representation of an outline oval with the words OLCO BST BRITISH MADE within—balata machine belting made in Great Britain. A. Olsen & Co. (London), Limited, 101 Leadenhall street, London, E. C. 3.
- 382,205. Representation of a double-outlined triangle with the word ECOSOLE conventionalized to fit the space within—sheets (of which india rubber is the predominating material) for repairing the soles of footwear. S. Tenenbaum, trading as The North Kent Rubber Co., 148 Plumstead Road, Plumstead, London, S. E. 18.
- 381,317. The word DEXTER—golf balls. Wallace, Scott & Co., Limited, Minto avenue, Cathcart, Glasgow.
- 382,591. Representation of the head of a man wearing a hat, with the word TEOM superimposed so that the letters E and O replace his eyes—machine belting (india rubber or gutta percha predominating). Fleming, Birkby & Goodall, Limited, West Grove Mill, 20 New Bond street, Halifax, Yorkshire.
- 382,734. The word DAUNTLESS—surgical india rubber gloves, finger stalls, ice bags and other similar india rubber goods. H. Gordon, 8A City Road, Finsbury Square, London, E.C.1.
- 382,507. A representation of the Greek letter Omega with the word "Omega" below it—india-rubber covered wire. The General Electric Co., Limited, 67 Queen Victoria street, London, E.C.4.
- 382,558. The word TEXETTE—surgical waterproofed protective dressings. S. Maw, Son & Sons, Limited, 12 Aldersgate street, London, E.C.1.
- 382,110. The word LILSKIN—artificial leather. The Bank Bridge Stopper Works (1911), Limited, 37 Fenchurch street, London, E.C.3.
- 382,111. The word LILSKIN—goods manufactured from india rubber and gutta percha not included in other classes than Class 40. The Bank Bridge Stopper Works (1911), Limited, 37 Fenchurch street, London, E.C.3.
- 382,419. The word "NIS"—packing, steam and hydraulic, and jointing material, in the nature of packing, and hose of all kinds included in Class 50. N. Isherwood, trading as Norman Isherwood & Co., Salop Street Works, Salop street, Bolton, Lancashire.

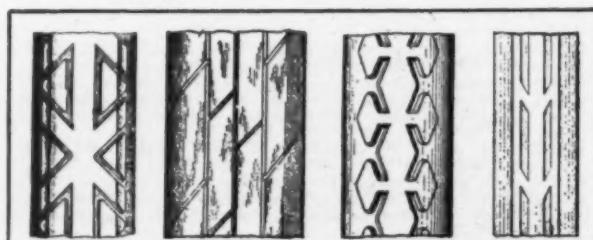
THE DOMINION OF CANADA.

- 23,330. Representation of a man kneeling beside an oval—garters. A. Stein & Co., Chicago, Illinois, U. S. A.
- 23,385. The word HORSE-SHOE—tires for automobiles, bicycles and other vehicles, inner tubes, casings and parts. Racine Auto Tire Co., Racine, Wisconsin, U. S. A.
- 23,393. The word PENNSYLVANIA VACUUM CUP and letters V. C.—rubber vehicle tires. Pennsylvania Rubber Co., Jeannette, Pennsylvania, U. S. A.
- 23,416. A rope in a circle enclosing the words MINER RUBBERS and the letter M—footwear made in whole or in part of rubber. The Miner Rubber Co., Limited, Montreal, Quebec.
- 23,417. A rope in a circle enclosing the words MINER'S GREYHOUND and the letter M—footwear made in whole or in part of rubber. The Miner Rubber Co., Limited, Montreal, Quebec.

DESIGNS.

THE UNITED STATES.

- No. 51,994. Tire. Term 14 years. Patented April 30, 1918. E. J. Kraft, Racine, Wisconsin, assignor to Ajax Rubber Co., Inc., New York City.
- 51,996. Tire. Term 14 years. Patented April 30, 1918. C. A. Shriner, Toledo, Ohio.



- 51,944 51,996 52,026 52,027
- 52,026 Tire. Term 7 years. Patented May 7, 1918. J. Froehlich, New York City.
- 52,027 Tire. Term 14 years. Patented May 7, 1918. G. H. Lewis, assignor to The Fisk Rubber Co.—both Chicopee Falls, Massachusetts.

Review of the Crude Rubber Market.

Copyright, 1918.

NEW YORK.

THE crude rubber market has been practically dormant throughout the past month, as late in May the large manufacturers had bought forward plantation rubber to the limit of their allocations. However, rubber of any sort, free from import restrictions was in continual demand at maximum prices but the supply, being all out of proportion to the needs of the trade, was soon exhausted. When all the allocation certificates had been taken up and no more free rubber was in evidence, the market became absolutely dead, with small possibility of awakening until the three months' period of experimental regulation has expired. Early in the month prices on prompt shipment plantation rubber were around 50 cents for Latex and 48 cents for Ribs ex dock, Pacific Coast. On June 21, prompt shipment Latex was quoted 43 cents and Sheets 42 cents, ex dock, Pacific Coast and Upriver fine was quoted 62 cents, prompt shipment.

Prices of Para sorts, other than those listed May 14—Manitoba rubber, Pontianak, gutta percha, gutta siak and balata, have been fixed, and percentage of shrinkage allowances for certain South American grades has been regulated by the War Trade Board, the details of which are published elsewhere in this issue.

The new carload rate on crude rubber imports via the Pacific Coast, effective June 26, is \$1.56 $\frac{1}{2}$ cents per hundred pounds.

LONDON

The London market has also been quiet and featureless, finally subsiding to absolute dullness. Prices have held fairly firm around 26 to 26½d. for Crêpe and 25 to 25½d. for Ribs.

STATISTICS.—The London and Liverpool imports for April were 11,500,300 pounds, value £1,367,299, compared with 5,703,100 pounds, value £698,415, for March. Reexports for April were 2,699,100 pounds, value £323,101, compared with 3,949,000 pounds, value £501,502, for March.

NEW YORK SPOT QUOTATIONS.

Following are the New York spot quotations one year ago, one month ago, and June 26, the last being government prices for occasional small lots of free rubber.

PLANTATION HEVEA—		July 1, 1917.	June 1, 1918.	Free Rubber June 26, 1918.
First latex crêpe.....		65% @	63 @	63 @
*Hevea first crêpe.....		63 @	60 @	60 @
Amber crêpe No. 1.....		61 @	60 @	60 @
Amber crêpe No. 2.....		60 @	58 @	58 @
Amber crêpe No. 3.....		59 @	57 @	57 @
Amber crêpe No. 4.....		62 @	60 @	60 @
Brown crêpe, thick clean.....		60 @	60 @	60 @
Brown crêpe, thin clean.....		58 @	50 @	50 @
Brown crêpe, thin specky.....		53 @	44 @	44 @
Brown crêpe, rolled.....				
Smoked sheet, ribbed standard quality.....		65% @	62 @	62 @
*Hevea ribbed smoked sheets.....				
Smoked sheet, plain standard quality.....		64 @	60 @	61 @
*Hevea plain or smooth smoked sheets.....				
Unsmoked sheet, standard quality.....		62% @	61 @	60 @
*Hevea unsmoked sheets.....				
Colombo scrap, No. 1.....		49 @	46 @	46 @
Colombo scrap, No. 2.....		45 @	44 @	44 @

第四章 财务管理

<i>ALLIAN PARAS</i>				
Upriver fine	69	◎	68	◎
Upriver medium	63	◎	63	◎
Upriver coarse	49	◎	40	◎
Upriver weak fine	60	◎	56	◎
Upper caucho ball	44	◎	40	◎
Islands fine	66	◎	59	◎
Islands medium	58	◎	—	—
Islands coarse	34	◎	27	◎
Cametá	34	◎	28	◎
Lower caucho ball	41	◎	36	◎
Peruvian fine	67	◎	—	—
Tanajos fine	67 ½	◎	—	—

		July 1, 1917.	June 1, 1918.	Free Rubber. June 26, 1918.
AFRICANE—				
Accra flake, prime.....	31 @	28 @	28 @	
Niger flake, prime.....	31 @	28 @	28 @	
Benguela, extra No. 1, 28%.....	41 @	33 @	33 @	
Benguela, No. 2, 32½%.....	38 @	29 @	29 @	
Congo prime, black upper.....	58 @	50 @	50 @	
Congo prime, red upper.....	54 @	48 @	48 @	
Rio Nunes ball.....	65 @	55 @	55 @	
Rio Nunes sheets and strings.....	64 @	@	@	
Conakry piggery.....	64 @	@	@	
Massai sheets and strings.....	64 @	55 @	55 @	
CENTRALE—				
Castillo block	48 @	@	@	@
Corinto scrap	46 @	@	@	
Esmeralda sausage	46 @	39 @	39 @	
Central scrap	45 @	39 @	39 @	
Central scrap and strip.....	44 @	@	@	
Central wet sheet.....	33 @	@	@	
Guayule, 20% guarantee.....	35 @	35 @	35 @	
Guayule, dry.....	@	48 @	48 @	
MANICOBAS—				
Ceara negro heads.....	42 @	40 @	40 @	
Ceara scrap	32 @	34 @	34 @	
Manicoba special	37½ @	42 @	42 @	
Manicoba extra	35 @	38 @	38 @	
Manicoba regular	33 @	34 @	34 @	
Mangabeira thin sheet.....	40 @	40 @	40 @	
Mangabeira thick sheet.....	37½ @	32 @	32 @	
EAST INDIAN—				
Assam crepe	64 @	**56 @	57 @	
Assam onions	59 @	**44 @	@	
Penang block scrap.....	42 @	**37 @	@	
Borneo, No. 2.....		@	@	
No. 3.....	@	@	@	
BALATA—				
Block, Ciudad Bolivar.....	67 @	69 @	69½ @	
Colombia	@	60 @	61 @	
Panama	@	59 @	59 @	
Surinam sheet	78 @	**93 @	95 @	
amber	@	94 @	97 @	
PONTIANAK—				
Banjermaasin	11 @	12 @	14½ @	15 @
Pressed block	18 @	**23 @	23 @	
GUTTA PERCHA—				
Gutta Siaik	18 @	**24 @	23 @	
Red Macassar	2.00 @ 3.00	**2.00 @ 3.00	3.00 @	

*Rubber Association of America nomenclature.

*Rubber A
**Nominal.

RECLAIMED RUBBER

The demand for reclaimed rubber during June has been almost negligible, due to the fact that the rubber mills have shown very little interest in the reclaim market, and business has been confined to contract deliveries and sales of small emergency lots.

The rubber manufacturers have doubtless covered their requirements for the present and are awaiting the outcome of the three months' restriction regulations and the action of the Government in regard to rubber imports for the following period.

NEW YORK QUOTATIONS.

Subject to change without notice.

Subject to change without notice.			
Corona No. 30 black.....	.lb.	.19	@
white .....	.lb.	.21	@
No. 312 hydro-carbon.....	ton	50.00	@
325 hydro-carbon.....	ton	65.00	@
Standard shoe reclaim.....	.lb.	.15	%
fire reclaim.....	.lb.	1	%

COMPARATIVE HIGH AND LOW SPOT RUBBER PRICES

	June.		
	1918. ¹	1917.	1916.
Plantation:			
First latex crêpe.....	\$0.60 @ \$0.63	\$0.65 @ .80	\$0.67 @ \$0.59
Smoked sheet ribbed.....	.62 @ .62	.65 @ .80	.66 @ .58
Paras:			
Upriver, fine.....	.68 @ .68	.69 @ .76	.62 @ .68
Upriver, coarse.....	.40 @ .40	.48 @ .54	.42 @ .50
Islands, fine.....	.59 @ .59	.68 @ .73	.57 @ .62
Islands, coarse.....	.27 @ .27	.29 @ .34	.27 @ .31
Cametá.....	.28 @ .28	.33 @ .37	.33 @ .35

¹ Figured only to June 24.

THE MARKET FOR COMMERCIAL PAPER.

In regard to the financial situation, Albert B. Beers, broker in crude rubber and commercial paper, No. 68 William street, New York, advises as follows:

The demand for commercial paper during June has been rather light, as for the last two months, but the volume of rubber paper has also been small, the best names being quoted at 6 to 6½ per cent, and those not so well known 6½ to 7 per cent.

WEEKLY RUBBER REPORT.

GUTHRIE & CO., LIMITED, Singapore, report [May 9, 1918]:

For the weekly rubber auction which commenced yesterday the quantity catalogued was 1,000 tons. Prices for the highest grade rubber were fully up to those of last week, the top price for fine pale crépe being unchanged at \$105, and that for Ribbed smoked sheet \$2 up, at \$104. Apart from this, however, the market was somewhat erratic, being influenced, apparently, by the uncertainty that still exists in regard to the restriction of American imports. Brown and dark crépes were in poor demand, and averaged about \$6 down. The quantity sold was 460 tons.

The following was the course of values:

	In Singapore per Picul.*	Sterling Equivalent per Pound in London.	Equivalent in Cents.
Sheet, fine ribbed smoked.....	\$98@104	2/ 1½@2/2½	41.65@44.20
Sheet, good ribbed smoked.....	75@ 97	1/ 8½@2/0½	31.88@41.23
Sheet, plain smoked.....	74@ 81	1/ 8 @1/9½	31.45@34.43
Sheet, ribbed unsmoked.....	65@	1/ 6½@	27.63@
Sheet, plain unsmoked.....	65@	2/ 1½@2/2½	42.93@44.63
Crépe, good.....	85@100	1/10½@2/1½	36.13@42.50
Crépe, fine brown.....	72@ 82	1/ 7½@1/9½	30.00@34.00
Crépe, good brown.....	58@ 73	1/ 4½@1/7½	24.65@31.03
Crépe, dark.....	51@ 60	1/ 3½@1/5½	21.68@25.50
Crépe, bark.....	30@ 51	1/10½@1/3½	12.75@21.68
Scrap, virgin and pressed.....	45@	1/ 2@	19.13@
Scrap, loose.....	26@	/10@	11.05@

*Picul = 133½ pounds.

Quoted in S. S. dollars = 2/4 [56.7 cents].

EXPORTS OF INDIA RUBBER FROM MANAOS DURING APRIL, 1917.*

NEW YORK.

EXPORTERS.	Fine.	Medium.	Coarse.	Caucho.	Totals.
General Rubber Co. of Brazil.....	112,157	27,632	19,934	40,277	200,000
Tancredo, Porto & Co.	79,506	6,064	34,742	79,668	199,980
J. A. Mendes & Co.	54,740	10,710	13,290	100,320	179,060
Stowell & Co.	71,831	4,102	25,086	29,124	130,143
G. Fradellini & Co.	24,055	10,664	5,578	.....	40,297
Higson & Tall.	27,749	1,465	5,732	53	34,999
Adelbert H. Alden, Limited.	771	160	232	6,354	7,517
	370,809	60,797	104,594	255,796	791,996
In transit, Iquitos.....	85,743	103,029	25,273	37,666	251,711
Totals	456,552	163,826	129,867	293,462	1,043,707

Compiled by Stowell & Co., Manaos.
*No exports to Europe.

ARRIVALS AT THE PORT OF NEW YORK.

PLANTATIONS.
TO NEW YORK.

	POUNDS.
May 9.—By the <i>Roepat</i> =Batavia: General Rubber Co.	52,560
May 14.—By the <i>Khiva</i> =London: Aldens' Successors, Limited....	575,000
May 25.—By the <i>Hanna Nielsen</i> : J. T. Johnstone & Co.	571,200
May 28.—By the <i>Mandas</i> =London: Aldens' Successors, Limited....	1,850,000
May 28.—By the <i>Nerwas</i> =London: Aldens' Successors, Limited....	437,000
OVERLAND FROM FAR EAST.	
May 24-JUNE 17, Rubber Trading Co.	407,312
Hagemeyer Trading Co.	59,685
May 23-JUNE 24, J. T. Johnstone & Co.	848,990

GUAYULE.

BY RAIL.

MAY 27-JUNE 18.—Eagle Pass, Texas. Continental-Mexican Rubber Co. 487,160

CRUDE RUBBER ARRIVALS AT PACIFIC COAST AS REPORTED.

PLANTATIONS.

	POUNDS.
MAY 6.—By the <i>Empress of Asia</i> =Singapore: General Rubber Co.	156,800
MAY 8.—By the <i>Saitai Maru</i> =Colombo: General Rubber Co.	739,200
MAY 18.—By the <i>Celebes Maru</i> =Singapore: General Rubber Co.	89,600
MAY 22.—By the <i>Atsuta Maru</i> =Singapore: General Rubber Co.	112,000
JUNE 6.—By the <i>Kiku Maru</i> =Singapore: General Rubber Co.	167,200
JUNE 17.—By the <i>Yuki Maru</i> =Singapore: General Rubber Co.	336,000

JUNE 21.—By the *Komo Maru*=Singapore: General Rubber Co.

POUNDS.

General Rubber Co. 560,000

POUNDS.

Robinson & Co. 78,705

Winter Son & Co. 50,355

Poel & Kelly. 16,065

Robert Badenhop & Co. 45,765

J. Littlejohn & Co. 10,125

Fred. Stern & Co. 8,100

Aldens' Successors, Limited.... 7,830

Edward Maurer Co., Inc. 50,625 321,570

JUNE 5.—By the *Genzan Maru*=Singapore: Aldens' Successors, Limited.... 1,485

William H. Stiles. 24,435

J. Littlejohn & Co. 13,635

Robinson & Co. 12,285

Rubber Trading Co. 6,615

W. R. Grace & Co. 148,770

Mitsui & Co., Limited.... 435,240 642,465

JUNE 5.—By the *Grassus Maru*=Singapore: (Discharged at Vancouver, British Columbia.) Poel & Kelly. 75,465

TO NEW YORK.

JUNE 10.—By the *Mitsuki Maru*=Kobe: Robinson & Co. 33,210

JUNE 12.—By the *Swee Maru*=Yokohama: Nippon Yusen Kaisha. 15,525

Poel & Kelly. 196,830

Various. 51,975 264,330

JUNE 12.—By the *Malay Maru*=Kobe: Fred. Stern & Co. 12,555

William H. Stiles. 4,320

Aldens' Successors, Limited.... 24,570 24,570

JUNE 15.—By the *Tosa Maru*=Kobe: Nippon Yusen Kaisha. 27,810

Whittall & Co. 94,095

The Rubber Association of America, Inc. 570,645 664,740

The Rubber Association of America, Inc. 314,280

*Footnote.—The figures under this head and under Crude Rubber Arrivals at Pacific Coast as Reported, have been obtained from different sources; repetitions may, therefore, occur.

*Arrived at Tacoma.

CRUDE RUBBER ARRIVALS AT PACIFIC COAST AS STATED BY SHIPS' MANIFESTS.¹

SEATTLE AND TACOMA.

PLANTATIONS.

[Figured 135 pounds net to the case.]

TO AKRON, OHIO.

Firestone Tire & Rubber Co. 506,250

The B. F. Goodrich Co. 419,445

Goodyear Tire & Rubber Co. 81,000 1,006,695

MAY 22.—By the *Atsuta Maru*=Yokohama: Swinehart Tire & Rubber Co. 79,515

Goodyear Tire & Rubber Co. 9,315 88,830

JUNE 5.—By the *Alpa Maru*=Yokohama: Firestone Tire & Rubber Co. 112,590

Swinehart Tire & Rubber Co. 64,125

Goodyear Tire & Rubber Co. 3,105 179,820

JUNE 17.—By the *Yuki Maru*=Singapore: Firestone Tire & Rubber Co. 436,050

Goodyear Tire & Rubber Co. 539,730 975,780

TO NEW YORK.

MAY 26.—By the *Celebes Maru*=Muroran: Rubber Trading Co. 11,475

Robinson & Co. 99,630

L. Littlejohn & Co. 46,845

Edward Maurer Co., Inc. 65,070

United States Rubber Co. 66,600

Meyer & Brown. 55,215

Robert Radenhop & Co. 81,000 497,610

MAY 22.—By the *Atsuta Maru*=Yokohama: United States Rubber Co. 122,715

Robinson & Co. 4,725 127,440

TO NEW YORK.

JUNE 3.—By the *Haifuku Maru*=Kobe: Rubber Trading Co. 54,000

TO SEATTLE, WASH.

MAY 20.—By the <i>Celebes Maru</i> =Muroran:		
Edward Maurer Co., Inc.	45,225	
L. Littlejohn & Co.	332,775	
Poel & Kelly	336,555	
Goodyear Tire & Rubber Co.	39,015	
Charles T. Wilson Co., Inc.	94,500	
Mitsui & Co., Limited	51,975	
Osaka Shosen Kaisha	14,580	
Fred. Stern & Co.	21,600	936,225

MAY 20.—By the <i>Senator</i> =Hongkong:		
The B. F. Goodrich Co.	1,810,890	

MAY 21.—By the <i>Jinsen Maru</i> =Kobe:		
The B. F. Goodrich Co.	74,180	
Various	11,205	85,385

MAY 22.—By the <i>Katori Maru</i> =Yokohama:		
The B. F. Goodrich Co.	78,975	

May 22.—By the <i>Atsuta Maru</i> =Yokohama:		
The B. F. Goodrich Co.	157,275	

Nippou Yuzen Kaisha		
	176,040	

Various		
	16,200	

Aldens' Successors, Limited		
	53,730	403,245

JUNE 3.—By the <i>Taifuku Maru</i> =Kobe:		
East Asiatic Co.	105,435	

L. Littlejohn & Co.		
	239,760	

Fred. Stern & Co.		
	16,470	

Robinson & Co.		
	233,010	

Peninsula Trading Agency		
	84,240	

Curry McPhilips		
	56,700	

Charles T. Wilson Co., Inc.		
	24,570	

Aldens' Successors, Limited		
	41,985	

Guthrie & Co.		
	31,320	

Goodyear Tire & Rubber Co.		
	103,275	

Various		
	48,735	1,069,605

JUNE 5.—By the <i>Alps Maru</i> =Yokohama:		
The B. F. Goodrich Co.	8,775	

Aldens' Successors, Limited		
	273,780	

Fred. Stern & Co.		
	4,455	

Goodyear Tire & Rubber Co.		
	46,575	

Edward Maurer Co., Inc.		
	16,470	

J. T. Johnstone & Co.		
	98,550	

W. R. Grace & Co.		
	7,560	

Poel & Kelly		
	26,595	49,805

JUNE 5.—By the <i>Genzan Maru</i> =Singapore:		
Aldens' Successors, Limited	82,755	

Poel & Kelly		
	72,630	

Fred. Stern & Co.		
	32,400	187,785

JUNE 10.—By the <i>Mitsuki Maru</i> =Kobe:		
Charles T. Wilson Co., Inc.	67,095	

Edward Maurer Co., Inc.		
	46,170	

Poel & Kelly		
	128,250	241,515

JUNE 12.—By the <i>Suwa Maru</i> =Yokohama:		
Nippon Yuzen Kaisha	33,750	

Mitsui & Co., Limited		
	57,375	

Fred. Stern & Co.		
	34,155	125,685

JUNE 12.—By the <i>Malay Maru</i> =Kobe:		
L. Littlejohn & Co.	175,635	

Aldens' Successors, Limited		
	67,500	

The Rubber Association of America, Inc.		
	87,975	1,080,000

TO YOUNGSTOWN, OHIO.		
Republic Rubber Corp.	.....	26,325

TO JEANNETTE, PA.		
City Bank of New York	.....	47,115

TO WATERTOWN, MASS.		
JUN 17.—By the <i>Yuki Maru</i> =Singapore:		

(via Vancouver.)		
Hood Rubber Co.	.....	166,185

TO VANCOUVER, BRITISH COLUMBIA.		
The B. F. Goodrich Co.	143,505	

Charles T. Wilson Co., Inc.		
	57,375	200,880

JUNE 3.—By the <i>Taifuku Maru</i> =Kobe:		
Dunlop Rubber Co.	.....	16,740

JUNE 5.—By the <i>Genzan Maru</i> =Singapore:		
(Discharged at Vancouver.)	.....	648,135

MONTREAL, QUEBEC.		
JUN 3.—By the <i>Taifuku Maru</i> =Kobe:		

Dunlop Rubber Co.		
	27,500	

Goodyear Tire & Rubber Co.	
----------------------------	--

EXPORTS OF DOMESTIC MERCHANDISE.		
MANUFACTURED—	April, 1918.	
	POUNDS.	VALUE.
Automobile tires:		
To—		
France	\$7,313	
Panama	13,872	
Mexico	24,435	
British West Indies	17,837	
Cuba	88,995	
San Domingo	13,063	
Argentina	45,933	
Bolivia	1,553	
Brazil	78	
Chile	118,773	
Colombia	6,588	
Ecuador	5,542	
Peru	8,928	
Uruguay	8,353	
Venezuela	29,467	
British India	9,369	
Straits Settlements	5,088	
Australia	46,245	
New Zealand	50,264	
Philippine Islands	8,718	
British South Africa	1,282	
Other countries	16,959	
Total	\$528,655	
Other tires	\$44,894	
Reclaimed rubber	68,695	9,305
Belting	200,946	
India rubber boots, pairs	3,905	14,751
India rubber shoes, pairs	41,821	33,302
Druggists' sundries	37,948	
Other manufactures of india rubber	380,564	
Total	\$1,250,365	
EXPORTS OF FOREIGN MERCHANDISE.		
UNMANUFACTURED—	April, 1918.	
	POUNDS.	VALUE.
Balata:		
To—		
England	81,135	\$50,850
Scotland	10,080	5,350
Totals	91,215	\$56,200

THE MARKET FOR RUBBER SCRAP.

Copyright, 1918.

NEW YORK.

VERY little business has been reported during the past month, as the consuming trade was satisfied with small buying orders. Inquiries were not lacking and these brought out the fact that price concessions were expected, but, with the exception of negligible quantities, holders have held up prices. The prevailing dullness has naturally resulted in an easier market under-tone, but in the absence of manufacturers' demand the attitude is one of watchful waiting.

The movement that was expected to take place before June 25, when the 25 per cent increase in freight rates went into effect, did not materialize, which indicated that the mills were supplied with stock, at least for the present.

The classification committees of the Scrap Rubber Division of the National Association and the Rubber Reclaimers' Division of the Rubber Association have jointly agreed to the separate grading of "Jet Black Tires and Peelings," to become effective July 1. The proposed charge of one-half cent per pound, to cover the cost of sorting and rebaling rejections of jet black tires and peelings, however, is to be waived by the reclaimers on all shipments between July 1 and October 1, 1918.

BOOTS AND SHOES.—There has been an entire absence of any well-defined demand for this material, and delivered prices for boots and shoes have declined about seven-eighths of a cent per pound since last month's quotations. Trimmed and untrimmed arctics have fallen about one-quarter of a cent since last month.

INNER TUBES.—All grades have been steady, despite the general dullness prevailing, and prices show small changes.

MECHANICALS.—With the exception of a few small-lot orders, mechanicals have been neglected and prices are unchanged.

TIRES.—The situation in tires has been apparently uninterest-

UNMANUFACTURED—	April, 1918.	
	POUNDS.	VALUE.
Gutta percha:		
To—		
England	118,254	\$26,443
India rubber:		
To—		
Cuba	24,679	\$12,286
Australia	24,280	15,476
Totals	48,959	\$27,762

LONDON AND LIVERPOOL RUBBER STATISTICS.

The import and export figures by countries usually published in this table are withheld by the British Government.

UNMANUFACTURED—	April, 1918.	
	Pounds.	£
Crude rubber:		
To—		
London	9,994,500	1,192,858
Liverpool	1,505,800	174,441
Totals	11,500,300	1,367,299

UNMANUFACTURED—	April, 1918.	
	Pounds.	£
Waste and reclaimed rubber:		
To—		
London	2,100	.72
Liverpool	1,200	.21
Totals	3,300	.93

EXPORTS.

UNMANUFACTURED—	April, 1918.	
	Pounds.	£
Waste and reclaimed rubber:		
To—		
London	90,400	2,146

REEXPORTS.

UNMANUFACTURED—	April, 1918.	
	Pounds.	£
Crude rubber:		
To—		
London	1,985,500	236,041
Liverpool	713,600	87,060
Totals	2,699,100	323,101

RUBBER STATISTICS FOR THE DOMINION OF CANADA.

The import and export figures by countries usually published in this table are withheld by the Canadian Government.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

February, 1918.

UNMANUFACTURED—free:	February, 1918.	
	Pounds.	Value.
Rubber and gutta percha, crude caoutchouc or india rubber	1,082,002	\$565,474
Rubber, recovered	254,186	44,341
Hard rubber, in sheets and rods	3,461	...
Rubber substitute	16,065	3,108
Rubber, powdered, and rubber or gutta percha waste	153,793	9,282
Rubber thread, not covered	1,094	1,612
Chicle	158,905	65,184

Pref-
General
Manufactured—dutiable:
Tariff.
Value.

MANUFACTURED—dutiable:	February, 1918.	
	Pounds.	Value.
Boots and shoes	\$19,866	\$767
Belting	11,689	...
Waterproof clothing	8,087	16,551
Hose lined with rubber	5,127	...
Mats and matting	112	...
Packing	4,442	...
Tires of rubber for all vehicles	23,328	1,561
Rubber cement and all manufacturers of india rubber and gutta percha—n. o. p.	42,366	10,943
Hard rubber, unfinished, in tubes for fountain pens	1,318	...
Webbing—over one inch wide	12,696	114

EXPORTS OF DOMESTIC AND FOREIGN RUBBER GOODS.

February, 1918.

MANUFACTURED—	February, 1918.	
	Produce of Canada.	Reexports or Foreign Goods. Value.
Belting	\$3,320	...
Hose	10,059	\$40
Boots and shoes	23,990	1,117
Waterproof clothing	331	...
Tires	121,968	2,058
Waste	8,069	...
All other n. o. p.	5,380	718
Chicle	134,205	...

ing to the consumers, as few sales were reported. Prices were easier, standard white and mixed auto tires being quoted one-half to three-quarters of a cent lower than last month. White G. & G. tires show a similar decline.

STATISTICS.—The London and Liverpool imports of waste and reclaimed rubber for April were 3,300 pounds, value £93, compared with 12,100 pounds, value £148, for March. Exports for April were 90,400 pounds, value £2,146, compared with 786,900 pounds, value £17,932, for March.

NEW YORK QUOTATIONS FOR CARLOAD LOTS DELIVERED.

JUNE 25, 1918.

Prices subject to change without notice.

BOOTS AND SHOES.

Arctic tops	lb. \$0.01 1/2 @ .01 1/4
Boots and shoes	lb. .08 1/4 @ .08 1/2
Trimmed arctics	lb. .07 @ .07 1/2
Untrimmed arctics	lb. .06 @ .06 1/2

HARD RUBBER.

Battery jars, black compound	lb. .02 1/4 @ .27
No. 1, bright fracture	lb. .26 @ .27

INNER TUBES.

No. 1, old packing	lb. .22 1/2 @ .23
new packing	lb. .24 1/2 @ .25
No. 2	lb. .11 1/4 @ .11 1/2

RED.

Red	lb. .11 1/2 @ .11 1/4
-----	-----------------------

MECHANICALS.

Black scrap, mixed, No. 1	lb. .05 1/2 @ .05 1/4
No. 2	lb. .04 @ .04

CAR SPRINGS.

Heels	lb. .04 @ .04
Horse-shoe pads	lb. .05 1/4 @ .05 1/2

HOSE, AIR-BRAKE.

Hose, air-brake	lb. .02 1/2 @ .02 1/4
garden	lb. .02 1/8 @ .02 1/4

INSULATED WIRE STRIPPING, FREE FROM FIBER.

Insulated wire stripping, free from fiber	lb. .04 @ .04
Matting	lb. .01 1/2 @ .01 1/2

PACKING.

Packing	lb. .09 1/2 @ .10
No. 2	lb. .07 @ .07 1/2

RED SCRAP, NO. 1.

Red scrap, No. 1	lb. .12 @ .12 1/2
No. 2	lb. .09 @ .09

TIRES.

Pneumatic—			
Auto peelings, No. 1.....	lb. .10	@@	
No. 2.....	lb. .07 1/2	@@	.07 1/2
Bicycle.....	lb. .04 1/2	@@	
Standard white auto.....	lb. .05 1/2	@@	
Standard mixed auto.....	lb. .05	@@	
Stripped, unguaranteed.....	lb. .04 1/2	@@	.05 1/2
White, G. & G. M. & W. and U. S.	lb. .05 1/2	@@	
Solid—			
Carriage.....	lb. .05 1/2	@@	
Irony.....	lb. .02	@@	
Truck.....	lb. .06 1/2	@@	

THE MARKET FOR CHEMICALS AND COMPOUNDING INGREDIENTS.

Copyright, 1918.

NEW YORK.

MODERATE activity was reported in the base metal market around the first of the month, with lead particularly firm and strong. As the month progressed the demand for all metal sorts was fairly active and during the closing week, lead again featured, the market being strong and the price higher while spelter was active at advanced quotations.

The War Trade Board has restricted the importation of chrome ore and chromite from overseas. The sources of home supply are numerous, and are believed to be capable of extensive development. To provide for interim demands, pending the further development of such deposits, imports from Cuba, Guatemala, Newfoundland and Brazil by sea will be permitted, not exceeding 43,500 tons up to March 31, 1919, and from New Caledonia up to 10,000 tons prior to December 31, 1918. Shipments overland or by lake from Canada, overland from Mexico, or as return cargo from European ports when coming from convenient ports and not involving delays in loading, will be permitted. All outstanding licenses for the import of chrome ore and chromite for overseas have been revoked as to shipments made after June 15, 1918.

Asphalt has been placed on the restricted imports list by the War Trade Board. Imports for the calendar year of 1918 will be limited to a total quantity of 30,000 tons from Venezuela and 32,000 from the Island of Trinidad. All outstanding licenses for the importation of asphalt are revoked as to shipments made after June 15, 1918.

Allocation of the amounts permitted to be imported, regulation of the price, and other details will be arranged after conference with the War Industries Board.

Oil Director Requa states that at the present time there is a sufficient supply of gasoline for all requirements, and while conservation is being considered, no radical steps are probable.

The general situation in rubber chemicals has been quiet as manufacturers appear to have anticipated their requirements. The tendency towards advanced prices is noticed in comparing the present list with that of last month. The 25 per cent increase in freight rates that is to occur next month had no appreciable effect on this month's business.

COLORS.—The market has been quiet but a firm undertone effectively supported the advances made in certain coloring ingredients.

CARBON TETRACHLORIDE.—The Government has commandeered at least 90 per cent of the output and deliveries are therefore difficult. Prices have not advanced at this writing, and a quotation of 16 cents has been made.

LEAD PRODUCTS.—These materials are all very firm, due to the strong position of pig lead, and many of these products have advanced materially since last month.

NEW YORK QUOTATIONS.

JUNE 25, 1918.

Subject to change without notice.

ACCELERATORS, ORGANIC.

Accelerator N. C. C.	lb. .50	@@
Accelerant	lb. *\$2.62	@@
Accelerant (100 pound drums).....	lb. .50	@@

Accelerator No. 1.....	lb. .60	@@
Aldehyde oil	lb. 1.15	@ 1.25
Aniline oil	lb. .26	@ .27
Annex	lb. .75	@
Duplex	lb. 1.25	@
Excellerex	lb. .85	@
Hexamethylenexamine (Vitalin)	lb. .60	@@
Hexamethylene tetramine (powdered)	lb. 1.15	@ 1.25
Paraphenylenediamine	lb. *3.00	@
Tensilite	lb. .75	@
Thiocarbonanilide	lb. *.50	@
Velocite	lb. .65	@
Vitaminex	lb. .60	@@
ACCELERATORS, INORGANIC.		
Lead, dry red	lb. .10 1/2	@
sublimed blue	lb. .09	@
sublimed white	lb. .09	@
white, basic carbonate	lb. .09 1/2	@
white, basic sulphate	lb. .09	@ .09 1/2
Lime, flour	lb. .02	@
Litharge, domestic	lb. .10 1/2	@
English	lb. .12 1/2	@
sublimed	lb. *.09 1/2	@
Magnesium, carbonate	lb. .11 1/2	@ .13
calcined, heavy	lb. .11	@ .12
light	lb. .45	@
Magnesium oxide	ton 50.00	@ 65.00
Magnesite, calcined, powdered	ton 50.00	@ 65.00
ACIDS.		
Acetic, 28 per cent (bbis)	lb. .06	@ .09
Glacial, 99 per cent (carboys)	lb. *.40	@ .42
Cresylic, 97-99 per cent, straw color	gal. 1.10	@
95 per cent, dark	gal. 1.00	@
Muriatic, 20 degrees	lb. .02 1/2	@ .02 1/2
Nitric, 36 degrees	lb. .07 1/2	@
Sulphuric, 66 degrees	lb. .02 1/2	@
ALKALIES.		
Caustic soda, 76 per cent, ground	lb. .09	@
Soda ash, light, 58 per cent in bags	lb. .04 1/2	@
COLORS.		
Black:		
Bone, powdered	lb. .05	@@
granulated	lb. .09	@@
Carbon gas (cases)	lb. .15	@ .25
Ivory black	lb. .16	@ .30
Lamp black	lb. .15 1/2	@
Oil soluble aniline	lb. .12 1/2	@
Rubber black	lb. .06	@
Blue:		
Cobalt	lb. .25	@ .35
Prussian	lb. 1.25	@ 1.25
Ultramarine	lb. .20	@ .50
Brown:		
Iron oxide	lb. .03	@
Ochre, domestic	lb. .04	@ .06
imported	lb. .06	@ .07
Sienna, raw and burnt	lb. .06	@ .15
Umber, raw and burnt	lb. .05	@ .07
Green:		
Chrome tile	lb. .15	@
Oxide of chromium (casks)	lb. *.85	@
India rubber	lb. .75	@
Red:		
Antimony, crimson, sulphuret of (casks)	lb. .50	@ .55
crimson, "Mephisto" (casks)	lb. .48	@ .48
Antimony, golden, sulphuret of	lb. .25	@ .28
golden, "Mephisto" (casks)	lb. .26	@
golden, sulphuret, States brand, 16-17%	lb. .28	@
red sulphuret, States brand	lb. .25	@
vermilion sulphuret	lb. .55	@
Arsenic, red sulphide	lb. .45	@
Indian, reduced grades	lb. *.04	@ .08
pure bright	lb. *.14	@
Iron oxide, reduced grades	lb. .10	@
pure bright	lb. .17 1/2	@
Oil soluble aniline, red	lb. *.25 0	@ 3.00
orange	lb. *.25 0	@
Oxymony	lb. .18	@
Venetian	lb. .02 1/2	@ .04
Vermilion, English, pale, medium, dark	lb. 2.00	@ 2.10
White:		
Lithopone, imported	lb. *.07 1/2	@ .08
domestic	lb. .07 1/2	@
Ponolith	lb. .07 1/2	@ .07 1/2
Rubber makers' white	lb. .07 1/2	@
Zinc oxide, Horsehead (less carload, f. o. b. factory):		
"XX red"	lb. .10 1/2	@
"Special"	lb. .11	@
French process, red seal	lb. .13 1/2	@
green seal	lb. .13 1/2	@
white seal	lb. .14 1/2	@
Zinc sulphide, pure	lb. None	
Yellow:		
Cadmium, tri-sulphate	lb. *.26 8	@
sulphide	lb. 2.00	@
Chrome, light and medium	lb. .28	@ .32
India rubber	lb. *.10 0	@
Ochre, light or dark	lb. .02 1/2	@
Oil soluble aniline	lb. *.25 0	@
Zinc chromate	lb. *.50	@
COMPOUNDING INGREDIENTS.		
Aluminum flake (bbis, f. o. b. factory)	ton 27.00	@
Aluminum oxide	lb. *.18	@
Ammonia carbonate, powdered	lb. .13	@ .14
lumps	ton None	
Asbestine (bags)	ton 25.00	@
Asbestos (bags)	ton 35.00	@

Barium, carbonate, precipitated.....	ton 60.00 @
sulphide, precipitated.....	lb. .07 1/4 @
Barytes, pure white.....	ton 35.00 @
off color.....	ton 25.00 @
uniform floated (f. o. b. factory).....	ton 35.00 @
Basofor.....	ton 110.00 @
Blanc fixe.....	lb. .04 1/2 @
Bone ash.....	lb. .08 @
Chalk, precipitated, extra light.....	lb. .05 @ .05 1/2 @
precipitated, heavy.....	lb. .04 @ .04 1/2 @
China clay, imported.....	ton 50.00 @
Cotton linters, clean mill run, f. o. b. factory.....	bale 24.67 @
Fossil flour.....	ton 60.00 @
Glue, high grade.....	lb. .40 @ .50
medium.....	lb. .30 @ .40
low grade.....	lb. .15 @ .20
Graphite, flake (400 pound bbl.).....	lb. .10 @ .25
amorphous.....	lb. .04 @ .08
Ground glass FF. (bbl.).....	ton 60.00 @
Infusorial earth, powdered.....	ton 65.00 @
bolted.....	ton 60.00 @ .05 1/2 @
Mica, powdered.....	lb. .05 @ .10 @
Plaster of Paris.....	bbl. 2.00 @ 3.00
Pumice stone, powdered (bbl.).....	lb. .03 @ .04
Rotten stone, powdered.....	lb. .03 1/2 @
Rubber flux.....	lb. .15 @
Rubhide.....	lb. .38 @
Silex (silica).....	ton 20.00 @ 36.00
Soapstone, powdered, domestic.....	ton 20.00 @
imported.....	ton None
Starch, powdered corn (carload, bbls.).....	cwt. 4.61 @
(carload, bags 30 cts).....	cwt. 4.30 @
Talc, American.....	ton 15.00 @
French.....	ton 28.00 @
Tripoli Earth, powdered.....	ton 60.00 @
bolted.....	ton 65.00 @
Tyre-lith.....	ton 90.00 @
Walpole rubber flux.....	lb. .06 @
Whiting, Alba.....	cwt. .90 @ 1.00
commercial.....	cwt. 1.25 @ 1.30
gilders.....	cwt. 1.30 @ 1.40
Paris, white, American.....	cwt. 1.50 @ 1.75
English cliffstone.....	cwt. 1.75 @ 2.00
Wood pulp XXX.....	ton *40.00 @ 45.00

MINERAL RUBBER.

Gilsonite.....	ton 55.00 @
Genasco (carloads).....	ton 55.00 @
M. R.	ton 65.00 @
M. R. X.....	ton 100.00 @
Liquid rubber.....	lb. *.15 @
Pioneer, carload, delivered.....	ton *50.00 @
less carload, factory.....	ton *50.00 @
Richmond Brand.....	ton 75.00 @
No. 64 Brand.....	ton *50.00 @
Refined Elaterite.....	lb. .08 1/2 @
Raven M. R.....	lb. .02 @ .03

OILS.

Corn, refined Argo (carloads).....	cwt. 20.72 @
Glycerine (C. P. drums).....	lb. .65 @ .65 1/2 @
Linseed, raw (carloads).....	gal. 1.60 @
Palm.....	lb. .18 @
Paraffin.....	gal. *.27 @
Petrolatum.....	lb. .07 1/2 @
Petroleum grease.....	lb. .06 @
l'ne, steam distilled.....	gal. .55 @
Fine tar.....	gal. .36 @
Rapeseed, refined.....	lb. 1.80 @
blown.....	lb. .26 @
Rosin.....	gal. .60 @
Soya bean, crude.....	lb. .18 1/2 @
Tar (cases).....	gal. .34 @ .36

SOLVENTS.

Acetone (drums).....	lb. .25 1/2 @ .25 1/4 @
Benzol, 90 per cent.....	gal. .25 @ .30
Beta-naphthal, resublimed ordinary grade.....	lb. .85 @ .90
Halowax oil No. 1000 (f. o. b. Wyandotte).....	lb. *.25 @
No. 1001 (f. o. b. Wyandotte).....	lb. *.32 @
Naphtha, motor gasoline (steel bbls.).....	gal. *.24 @
73 @ 76 degrees (steel bbls.).....	None
68 @ 70 degrees (steel bbls.).....	None
V. M. & P. (steel bbls.).....	gal. .23 @
Toluol, pure.....	gal. 1.50 @ 1.55
Turpentine, spirits wood.....	gal. .70 @ .57
Venice.....	lb. *.10 @

SUBSTITUTES.

Black.....	lb. .11 @ .18
White.....	lb. .13 @ .25
Brown.....	lb. .18 @ .24
Brown factie.....	lb. .10 @ .23
White factie.....	lb. .14 @ .24
Cordex.....	lb. .45 @
Energen.....	lb. .30 @
Paragol soft and medium (carloads).....	cwt. 16.96 @
hard.....	cwt. 16.46 @
Toughenite.....	lb. .40 @

VULCANIZING INGREDIENTS.

Carbon, bisulphide (drums).....	lb. .08 @
tetrachloride (drum).....	lb. .16 @
Lead, black hyposulphite (Black Hypo).....	lb. None
Orange mineral, domestic.....	lb. 1.13 1/4 @
Sulphur chloride (drums).....	lb. .06 1/2 @ .06 3/4 @
Sulphur, flour (carloads).....	cwt. 3.90 @ 3.95
pure soft (carloads).....	cwt. 3.95 @

(See also Colors—Antimony)

RESINS AND PITCHES.

Cantella gum.....	lb. .65 @
Pine tar, retort kiln.....	gal. .25 @
Pitch, Burgundy.....	lb. .07 @
coal tar.....	lb. .01 1/4 @
pine tar.....	lb. .02 1/2 @
ponto.....	lb. .12 @
Resin, Pontianak, refined granulated.....	lb. None
fused.....	lb. None
Rosin, K.....	lb. .04 1/4 @
Shellac, fine orange.....	lb. .70 @ .72
Tar, kiln.....	bbl. 11.00 @ 11.50

WAXES.

Wax, beeswax, white.....	lb. .68 @ .70
cereza, white.....	lb. .21 @ .22
carnauba.....	lb. .70 @ .93
ozokerite, black.....	lb. .60 @
green.....	lb. .80 @
montan substitute.....	lb. .23 @ .25
paraffin, crude 118/120 m. p. (cases).....	lb. .09 1/4 @ .10
124/126 m. p. (cases).....	lb. .09 1/4 @ .10
refined 128/130 m. p. (cases).....	lb. .13 1/4 @ .14
135/137 m. p. (cases).....	lb. .15 @ .16 1/2

*Nominal.

THE MARKET FOR COTTON AND OTHER FABRICS.

Copyright, 1918.

NEW YORK.

A MERICAN COTTON.—Despite favorable crop reports the American cotton market has been steady during the month, with advancing prices. On June 1, New York quotation on middling spot was 29 cents, and on June 26, the quotation was 32.30 cents, with a tendency to decline. Futures show a corresponding advance with the interest centered in July shipments that closed at 28.27 to 28.30 on June 25.

EGYPTIAN COTTON.—All outstanding licenses for the importation of Egyptian cotton have been revoked by the War Trade Board as to shipments from abroad after June 20, 1918. Hereafter, licenses will only be issued under the following provisions: 1. No licenses shall be issued for the importation from Egypt to the United States of brown Egyptian and other low grade Egyptian cottons. The cottons covered by this provision include the grades known as Mitaffi, Upper Egypt and other grades having a staple 1 1/2 inches in length or less. 2. Sakellarides and other high grade Egyptian cottons commonly known as "Sakels," having a length of staple of 1 1/2 inches or more, may be imported to the amount of 80,000 bales during the calendar year of 1918. Importations will be embargoed for the remainder of the calendar year, if at any time before December 31, 1918, imports of Egyptian cotton into the United States, shipped since January 1, 1918, shall have reached the total of 80,000 bales. 3. All cotton imported under this arrangement shall be controlled by the Textile Alliance, Inc., in advisement with the War Industries Board and the Department of Agriculture, and by them allocated to various manufacturers for use in the manufacture of necessary articles.

SEA ISLANDS COTTON.—A most unfavorable outlook with regard to the growing crop is reported. With restricted acreage and damage from the boll-weevil, the new crop is certain to be small. Estimates of the season's crop have been made as low as 20,000 bales.

MECHANICAL DUCK.—The duck situation has not improved to any appreciable extent since last month. The mills, however, manage to make contract deliveries in quantities sufficient to keep the manufacturers going. Prices are unquotable.

RAINOAT FABRICS.—There was considerable excitement among the small raincoat manufacturers during last month, due to the announcement by some rubberizers, that they would not accept any civilian business after June 30. Due to the small stock of coated goods on hand, these small concerns will consequently be compelled to manufacture other classes of merchandise within

the next few months, or go out of business entirely. It is believed, however, that the situation will be met, as some of the large rubber concerns are enlarging their plants, in order to be able to take care of the government work, and to do a little civilian business.

The prices of raincoat fabrics remain about the same as last month.

TIRE FABRICS.—Business was quiet in tire fabrics, a condition that is expected at this time of year. Manufacturers of rubber goods were able to secure ample supplies of rubber fabrics but Egyptian grades are difficult to obtain unless contracted for. The market undertone has been strong and prices have advanced.

NEW YORK QUOTATIONS.

JUNE 25, 1918.

Prices subject to change without notice.

AIRPLANE AND BALLOON FABRICS:

Wamsutta, S. A. I. L. No. 1, 40-inch.....	yard	*\$0.60 @
No. 4, 38½-inch.....	yard	.50 @
for gas masks...	yard	.45 @

ASBESTOS CLOTH:

Brake lining, 2½ lbs. sq. yd., brass or copper insertion lb.	.80 @
2½ lbs. sq. yd., brass or copper insertion lb.	.85 @

BURLAPS:

32—7½-ounce	100 yards	None
40—7½-ounce		18.75 @
40—8-ounce		19.00 @
40—10-ounce		23.75 @
40—10½-ounce		24.00 @
45—7½-ounce		21.75 @
45—8-ounce		22.00 @
45—9½-ounce		28.75 @
48—10-ounce		*37.00 @

TIRE FABRICS

JENCKES SPINNING COMPANY

PAWTUCKET
RHODE ISLAND

DRILLS:

38-inch 2.00-yard	yard	.42½ @
40-inch 2.47-yard	yard	.34½ @
52-inch 1.90-yard	yard	.46½ @
52-inch 1.95-yard	yard	.46½ @

DUCK:

CARRIAGE CLOTH :		
38-inch 2.00-yard enameling duck.....	yard	.40 @
38-inch 1.74-yard	yard	.49 @
72-inch 16.66-ounce	yard	.89 @
72-inch 17.21-ounce	yard	.91 @

MECHANICAL:

Hose	pound	*.70 @ .75
Belting	pound	*.70 @ .75

HOLLANDS, 40-INCH:

Acme	yard	*.30 @
Endurance	yard	.33½ @
Penn	yard	.37 @

OSMABURGS:

40-inch 2.35-yard	yard	.33½ @
40-inch 2.48-yard	yard	.32 @
37½-inch 2.42-yard	yard	.33 @

RAINFOOT FABRICS:

COTTON:

Bombazine 64 x 60 water repellent.....	yard	.23 @
60 x 48 not water repellent.....	yard	.20½ @
Cashmeres, cotton and wool, 36-inch.....		.65 @
Twilla 64 x 72.....		.30 @ .32½
64 x 102.....		.35 @ .37½
Twill, mercerized, 36-inch, tan and olive.....		.34½ @
blue and black.....		.35½ @
Tweed .....		.45 @ .50
Tweed, printed .....		.22 @
Plaids 60 x 48.....		.21½ @
56 x 44.....		.20½ @
Repp .....		.23 @ .32
Surface prints 60 x 48.....		.21½ @
64 x 60.....		.23½ @

IMPORTED WOOLEN FABRICS SPECIALLY PREPARED FOR RUBBERIZING

—PLAIN AND FANCIES:

63-inch, 3½ to 7½ ounces.....	yard	1.00 @ 2.80
36-inch, 2¾ to 5 ounces.....	yard	.70 @ 1.67

IMPORTED PLAID LINING (UNION AND COTTON):

63-inch, 2 to 4 ounces.....	yard	.90 @ 1.60
36-inch, 2 to 4 ounces.....	yard	.52½ @ 1.00

DOMESTIC WORSTED FABRICS:

36-inch, 4½ to 8 ounces.....	yard	.60 @ 1.50
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DOMESTIC WOVEN PLAIN LININGS (COTTON):

36-inch, 3¾ to 5 ounces.....	yard	.19 @ .30
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SHEETINGS:

40-inch 2.35-yard	yard	*.28½ @
40-inch 2.50-yard	yard	*.27½ @
40-inch 2.70-yard	yard	*.24½ @
40-inch 2.85-yard	yard	*.23 @
40-inch 3.15-yard	yard	*.19½ @

JACKET:

Delaware	yard	.32½ @
Schuylkill	yard	.35 @

SILKS:

Canton, 38-inch	yard	.34½ @
Schappe, 36-inch	yard	.32½ @

STOCKINETTES:

COTTON, 52-INCH:

D—14-ounce	yard	*.85 @ .90
E—11½-ounce	yard	*.60 @ .65
F—14-ounce	yard	*.85 @ .90
G—8-ounce	yard	*.75 @ .80
H—11-ounce	yard	*.70 @ .85
I—9-ounce	yard	*.60 @ .65
Knitback	pound	1.75 @ 2.00

WOOL, 52-INCH:

A—14-ounce	yard	*1.75 @
B—14-ounce	yard	*2.25 @
C—14-ounce	yard	*2.50 @

TIRE FABRICS:

17½-ounce Sea Island, combed.....	square yard	1.75 @ 1.80
17½-ounce Egyptian, combed.....	square yard	1.35 @ 1.40
17½-ounce Egyptian, carded.....	square yard	1.25 @ 1.30
17½-ounce Peelers, combed.....	square yard	1.15 @ 1.20
17½-ounce Peelers, carded.....	square yard	1.00 @ 1.05

*Nominal.



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